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THE DROP-OUT PROBLEM IN IOWA HIGH SCHOOLS.
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THE OBJECTIVES OF THE PROJECT WERE TO IDENTIFY THE CHARACTERISTICS OF DROPOUTS AND OF PUPILS WHO PERSIST IN SECONDARY SCHOOLS, AND TO IDENTIFY THE DIFFERENCES BETWEEN SCHOOLS WITH HIGH AND LOW HOLDING POWER. INFORMATION WAS GATHERED FROM APPROXIMATELY 73 SCHOOLS OR 10 PERCENT OF THE SECONDARY SCHOOLS IN IOWA. THE STUDY CONSIDERED THE INDIVIDUAL STUDENT'S INTELLIGENCE READING GRADE LEVEL, ACHIEVEMENT TEST SCORES, REPORT CARD GRADES, AND PARTICIPATION IN EXTRACURRICULAR ACTIVITIES. OTHER DATA PRESENTED SUCH ASPECTS OF THE SCHOOL PROGRAM AS SIZE, TEACHER LOAD, SCOPE AND NATURE OF CURRICULUM, MARKING AND PROMOTION POLICY, ACTIVITY PROGRAM, PROVISION FOR INDIVIDUAL DIFFERENCES, AND GUIDANCE AND COUNSELING SERVICES. SUCH PERSONAL CHARACTERISTICS OF YOUTH AS LOW INTELLIGENCE, LACK OF SCHOLASTIC SUCCESS, LOW ECONOMIC LEVEL OF FATHER'S OCCUPATION, PARENTAL LACK OF EDUCATION, AND LACK OF PARTICIPATION IN SCHOOL ACTIVITIES WERE FOUND TO BE POSITIVELY CORRELATED WITH WITHDRAWAL FROM HIGH SCHOOL. THE LARGER SCHOOLS HAVE A POORER HOLDING POWER. A GOOD GUIDANCE AND COUNSELING PROGRAM AND A CURRICULUM WHICH PROVIDES FOR DIFFERENCES IN ABILITY COULD DO MUCH TO OVERCOME THE FORCES THAT ARE INFLUENCING YOUTH TO LEAVE SCHOOL BEFORE GRADUATION. (GC)

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OWA HIGH SCHOOLS

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IOWA STATE DEPARTMENT OF PUBLIC INSTRUCTION

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THE DROP-OUT PROBLEM IN IOWA HIGH SCHOOLS*

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Coordinator

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1958

Foreword

The failure of many youth to complete high school even though they have the ability to do so has been of great concern to educators and parents in the United States for several decades. It is of concern because the nation as well as the individual usually suffers when a boy or girl does not prepare himself as fully as possible to live and to make a living. The problem varies in extent and with respect to associated factors from state to state and from community to community. Educators in each state and each school system need to study the problem as it affects their children if effective means are to be developed to reduce the rate of drop-out to a minimum.

This study was proposed by the Iowa Committee on Life Adjustment Education, an advisory committee to the State Superintendent of Public Instruction, following a preliminary study conducted by the Committee in 1954. It is the first, or fact finding phase of a comprehensive study, the second phase of which will be experimental in an effort to alter the programs in selected high schools so as to reduce the rate of withdrawal.

Funds and resources for the study were provided by the United States Office of Education of the Department of Health, Education and Welfare, the Iowa State Department of Public Instruction and the State University of Iowa. A research grant was made by the United States Office of Education to the Iowa State Department of Public Instruction and the State University of Iowa and the Department of Public Instruction provided personnel and facilities.

Professors L. A. Van Dyke and Kenneth B. Hoyt of the State University of Iowa served as co-directors of the project and prepared this summary report. Arthur C. Anderson of the Iowa Department of Public Instruction served as the business administrator and coordinator, and John W. Loughary, Paul E. Opstad, James E. Hayes, Donald A. Green and Donald B. Miller served with Professors Van Dyke and Hoyt as a research team in collecting and analyzing the data.

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INTRODUCTION

Public education in the United States is committed to a program of education for all educable youth through the secondary school years. It is now widely recognized that more and more education is essential for the individual citizen to take an intelligent and responsible part in the complex affairs of our democracy. The compulsory age limit has been extended upward for a variety of reasons, not the least of which is the belief that a certain amount of secondary schooling for each individual is essential to the survival of our nation in an interdependent and scientific world. Furthermore, it is believed that nearly all adolescents can personally profit by completing four years of secondary school, and that it is the responsibility of the schools to develop a program so appropriate that all educable youth will be encouraged to complete a secondary education.

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That the schools have done a laudable job is evidenced by the increase in the per cent of adolescents completing high school since the turn of the century. In 1953-54, the ratio of students graduated that year to the total seventeen year old population was six to ten or 60 per cent as compared with 6.4 per cent in 1899-1900.[1] When the total high school enrollment is considered, not just graduates, the picture is even better. In 1953-54, the national ratio of the number enrolled in grades nine through twelve to the total population between the ages of fourteen and seventeen years inclusive was 80.4 to 100 as compared with 11.4 to 100 in 1899-1900.[2] This same ratio for the state of Iowa in 1949-50 was 82.7 to 100 as compared to the national ratio of 76.5 to 100 for the same year. Iowa ranked sixteenth among the forty-eight states in this respect.[3]

Even though there is a greater proportion of youth attending and graduating from high school today than ever before, there are still many who do not graduate. Out of every 1,000 pupils in the United States enrolled in the fifth grade in 1946-47, only 553 graduated from high school in 1954. Since 872 of these 1,000 fifth grade pupils had entered the ninth grade in 1950, it is apparent that the majority of those students who withdrew from school prior to high school graduation did so after entering high school. Actually, only 634 of every 1,000 ninth grade pupils in 1950-51 graduated in 1954.

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The 36.6 per cent who left school after entering the ninth grade lend proof to the fact that the goal of high school education for all educable youth is far from being met. Here again, Iowa has a better record than the nation as a whole. In 1950-51, the ratio of public high school graduates to fifth grade enrollments eight years earlier was 51.8 to 100 for the United States and 63.8 to 100 for Iowa.[1] The ratio of public high school graduates to ninth grade enrollments four years earlier was 63.4 to 100 for the United States and 75.6 to 100 for Iowa.[2] The 24.4 per cent of youth who fail to graduate from Iowa high schools should be of great concern to educators and to the people of the state.

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[1] *Biennial Survey of Education in the U. S. -- 1952-54*, Chapter One, U. S. Office of Education, 1957, p. 26.

[2] Ibid, p. 26.

[3] Gaumnitz, W. H., *High School Retention by States*, U. S. Office of Education Circular #398, 1954, p. 14.

Statement of the Problem

Before steps can be taken to improve the holding power of Iowa public high schools, it is necessary that factors that influence youth to drop out before graduation be identified and analyzed. It is necessary also to find what characteristics distinguish the drop-outs from those who graduate for the purpose of identifying potential drop-outs. These things are the concern of this study.

The major questions to which the study has been directed are these:

1. What proportion of eighth grade graduates of public schools continue into high school and what proportion of those who enter the ninth grade of public high schools persist through graduation in Iowa?
2. Are there intellectual and scholastic characteristics which tend to distinguish drop-outs from persisters in Iowa public high schools?
3. Are there non-scholastic characteristics which tend to distinguish drop-outs from persisters in Iowa public high schools?
4. Are there certain elements in the educational programs of Iowa public high schools which tend to distinguish schools with low holding power from schools with high holding power?
5. Is it possible to describe the process of withdrawing from high school for individual students and can the predisposing and precipitating factors which are most common and influential in the process be identified?

Definitions

For the purposes of this study, a persister has been defined as a youth who entered the ninth grade in the fall of 1950, 1951 or 1952 and who graduated from the same high school at some later date. A drop-out has been defined as a youth who entered the ninth grade in September of 1950, 1951 or 1952 and who failed to graduate from that school and did not enroll in any other educational institution. Students who died during their high school career were excluded from the study.

Students who transferred into the schools studied subsequent to the first month of the ninth grade were not included in the study nor were students who transferred to another school and who either graduated or withdrew from the other school. Students who transferred to another school but re-entered the original school were included in the study.

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[1] Ibid, p. 9.

[2] Ibid, p. 4.

To satisfy the requirement for a comprehensive study, only schools which administered the Iowa Tests of Educational Development (ITED) to their ninth grade classes in the years 1950, 1951 and 1952 were included. This was necessary in order to have a common standardized measure of scholastic achievement for all students. It was impossible to locate and to administer tests to several hundred former high school students who had been out of school for from one to seven years.

This is not a serious limitation, however, since 167 of the 836 public high school districts in Iowa administered the tests to the ninth grades in 1950, 1951 and 1952 and well over one-half of the high school districts in Iowa engage in the testing program over a period of three years. It is the opinion of the Director of this program, Professor E. F. Lindquist, that the high schools which participate in the testing program are representative of all of the high schools of Iowa.

The study included only students who entered the ninth grade in 1950, 1951 or 1952, so that the most recent graduates could be studied. Otherwise school conditions as well as home environments might have changed markedly. Another practical consideration which makes it necessary to study recent enrollees is the fact that within a few years ex-students of high school become widely scattered and difficult to locate.

Design of the Study

The study was designed to be as representative as possible of all public high schools in Iowa and of the total group of students who entered the ninth grade in September of 1950, 1951 and 1952. To make the study manageable, it was divided into the following six parts:

Section I.	The holding power of Iowa public high schools.
Section II.	Relationships between intelligence, scholastic achievement and persistence in high school.
Section III.	Relationships between certain non-scholastic characteristics and experiences of students and persistence in high school.
Section IV.	Relationships between certain characteristics of school programs and the holding power of these schools.
Section V.	Case studies of the process of withdrawing from high school by individual youth.
Section VI.	Summary and Interpretations.

Five research workers were assigned to the study to secure data. These workers were advanced graduate students in educational administration and guidance and each had had several years of teaching and administrative experience in public high schools. The data were collected during the 1956-57 and 1957-58 school years. The statistical procedures employed are described in each of the separate sections of the report.

School Sample

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The eighth grade graduates in 1950, 1951 and 1952 for all feeder elementary schools for the high schools in the sample and the entering ninth grade classes of 1950, 1951 and 1952 in a stratified sample of Iowa high schools were studied. The classes for these years were selected because they included the most recent graduates. Because of the very large proportion of small high schools in Iowa (approximately 59 per cent enroll fewer than 100 students) and because of the need to determine differences, if any, in holding power of schools of different size, the sampling of schools could not approach true proportionality since the number of large schools in this type of sample would have been too small to make comparisons and to permit generalizations. The size groups employed in the study were as follows: Group I, 10-99; Group II, 100-249; Group III, 250-499; and Group IV, 500 and over.

In order to have a sufficient number of schools in each of the four size groups to permit comparison within as well as between groups, all nine of Group IV schools that had given the Iowa Tests of Educational Development to their ninth grade classes in 1950, 1951 and 1952 were included. This basis for selection was used so that a single index of scholastic achievement would be available for all students, a requirement for Section II of the study.

The population of schools from which the sample was drawn includes all of the 164 Iowa public high schools that administered the Iowa Tests of Educational Development to their ninth grade pupils in the years 1950, 1951 and 1952. This total represents approximately 20 per cent of the 847 public high schools in Iowa in 1951-52, the middle year of the three years included in the study. Since the number of high schools in each size group in Iowa which gave the tests was far from equal (54, 73, 28 and 9 respectively) different proportions of schools from the four groups were necessary for various statistical analyses involved in the separate parts of the study. (Note that the population under consideration was confined to schools giving the ITED in the specified years. The distribution of all Iowa public high schools according to the four size groups was 565, 189, 59 and 34, for Groups I, II, III, and IV respectively.)

Consequently, the percentage of schools studied of the total administering the ITED to their ninth grade pupils was 61 per cent for Group I, 25 per cent for Group II, 54 per cent for Group III, and 100 per cent for Group IV. The actual numbers were 32, 17, 15 and 9 for the respective groups, or a total of 73 schools in the sample. (Again, in terms of the population of all Iowa public high schools the percentages represented by the numbers for Groups I, II, III and IV respectively were 5.7 per cent, 9.0 per cent, 25.4 per cent, and 26.5 per cent. (See Table 1)

Table 1
NUMBER AND PER CENT OF SCHOOLS INCLUDED IN THE STUDY

	Number of Schools in the Sample	Number of Schools in the State 1951-1952	Per Cent of Schools Included in the Study
Group I	32	565	5.7%
Group II	17	189	9.0%
Group III	15	59	25.4%
Group IV	9	34	26.5%
Total	73	847	8.6%

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Pupil Sample

Schools in Groups I and II were asked to list those students, by class (i. e., 1950, 1951 or 1952), who entered the ninth grade but failed to complete high school, and to indicate whether the students so listed had graduated late, were still in school, had transferred to another school, or had dropped out.

The schools in Groups III and IV were asked to submit rosters of the entering classes of 1950, 1951 and 1952 along with rosters of the graduating classes of 1954, 1955 and 1956 plus a roster of the class of 1957. These lists were then checked to identify those students who did not graduate with their class or the one following. Lists of these students were submitted to the appropriate schools with the request that they be identified according to the categories mentioned for Groups I and II.

The names thus obtained comprised the total drop-out population of the sample. Because of the impracticability of securing data on all, a five per cent sample of the estimated total drop-out population of the state was selected. Instead of using a single statewide drop-out ratio for estimating the number of drop-outs within each group, the ratio for each group was used. This ratio was obtained by dividing the number of drop-outs listed by the participating schools, according to their size classification, by the total number of drop-outs plus persisters in each group. (See Table 2) These ratios are more applicable to the purposes of this study than ratios previously published for they, the ratios thus obtained, exclude transfer students. Transfer students were excluded from all other aspects of the study.

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The sample of drop-outs was selected so that the number contributed by each size group was proportional to the estimated number of drop-outs in the total Iowa population of drop-outs contributed by all the schools of that group.

A sample was selected which approaches representativeness of the total high school population in Iowa with respect to drop-outs. (See Tables 2, 3 and 4) The number of drop-outs required from each group were then selected randomly from the drop-outs obtained from the lists the participating schools submitted. More than enough subjects were selected. Therefore, in the analyses which were concerned with each size category separately, all available subjects were included. However, in the analyses which were concerned with all size categories together, the number of subjects from each group was limited to the five per cent proportionate sample.

Table 2
COMPUTATIONS IN ESTABLISHING THE FIVE PER CENT PROPORTIONATE SAMPLE

		Estimated Number of Drop-Outs (Total state)		Number of Drop-Outs in Sample		Number of Drop-Outs and Persisters in Sample		Adjusted High School Population (Total state)
(1)	Group I	3,271	=	198	÷	1,469	X	24,267
(2)	Group II	2,776		222		1,744		21,805
(3)	Group III	2,820		635		3,565		15,836
(4)	Group IV	6,502		1,299		5,222		26,134
(5)	(Total)	15,369						108,022
						Less 10% transfers	=	97,220
(6)	5% Proportionate sample -- .05 X 15,369 = 768							

		Number of Drop-Outs Included in Proportionate Sample by Group		Estimated Number of Drop-Outs by Group		Total Estimated Number of Drop-Outs		Total Proportionate 5% Sample
(7)	Group I	163	=	3,271	÷	15,369	X	768
(8)	Group II	139		2,776		15,369		768
(9)	Group III	141		2,820		15,369		768
(10)	Group IV	325		6,502		15,369		768

Table 3
NUMBER OF SUBJECTS INCLUDED IN THE FIVE PER CENT PROPORTIONATE SAMPLE

School Group	Drop-Outs			Persisters		
	Male	Female	Total	Male	Female	Total
I	90	73	163	90	73	163
II	85	54	139	85	54	139
III	74	67	141	74	67	141
IV	157	168	325	157	168	325

Table 4
SEX RATIO OF DROP-OUTS

School Group	Number of Male Drop-Outs from Schools Studied	Number of Female Drop-Outs from Schools Studied	Ratio of Male Drop-Outs to Female Drop-Outs
I	109	89	55/45
II	135	87	61/39
III	335	300	53/47
IV	627	672	48/52
Total	1,206	1,148	51/49

Students who persisted in school were paired with the drop-outs with respect to school attended, year of entry into ninth grade, and sex. This group was randomly selected from the rosters of those entering students who graduated from high school.

Collection of Data

Five research workers secured personal data, for the drop-outs and persisters selected, from the school records (including the cumulative folders, permanent record cards, grade sheets, and room registers), and from the teachers and administrators in the schools. The following information was secured, as far as possible, for each entering ninth grade student in the sample:

(1) Sex
(2) Age at Time of Withdrawal
(3) Last Year and Month of School Completed
(4) Per Cent of Time Absent
(5) Number of Extra-Curricular Activity Areas Participated in and Type of Extra-Curricular Activities Engaged in
(6) With Whom Living (Parent, Guardian, or Other)
(7) Marital Status of Parents
(8) Occupation of Father
(9) Whether or Not the Mother Worked
(10) Education of Parents
(11) Intelligence Test Score
(12) Standardized Achievement Test Scores (Iowa Tests of Educational Development)
(13) Elementary School Grade Point Average
(14) Elementary Grades Failed
(15) High School Grade Point Average
(16) Distribution of High School Grades

The investigators were unable to obtain complete information on all subjects because of incomplete school records. This situation occurred more frequently for the drop-outs and particularly for those who withdrew shortly after entering high school. The original selection of subjects

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was maintained except for those for whom no data were available. In such cases, substitutions were made. If the sample had been limited to those subjects for whom complete information was available, considerable bias would have appeared in that drop-outs who withdrew from high school in the first and second years would have been under-represented.

The following data on school programs were secured for each of the 73 schools studied for Section IV:

(1) Extent and Nature of Curricular Offerings
(2) Extent and Nature of the Extra-Curricular Program
(3) Description of Guidance Facilities
(4) Description of the School Plant
(5) Teachers and Administrators Evaluations of Teacher Morale
(6) Pupil Reactions to Questions Related to Pupil Morale

The first four items were rated on a scale adapted from corresponding sections of the *Evaluative Criteria* of the Cooperative Study of Secondary School Standards (1950 Edition). The last two items were secured by means of brief scales developed by the research team for this purpose.

The data on eighth grade graduates who continued to high school were secured from the records of the feeder elementary schools or the eighth grade of the junior high schools for each of the 73 high schools included in the study. All of the eighth grade graduates were included. The lists were checked against the lists of entering ninth grade students for 1950, 1951 and 1952, and each name on the eighth grade list not appearing on the ninth grade list was checked as a possible drop-out or transfer student. The transfer students were then identified from records or interviews with administrators and teachers and eliminated from the study. Data on the age of eighth grade students were secured from permanent school records.

Case Study Sample

The sample of schools and subjects for the first four sections of the study was a stratified random sample. The selection of the sample for Section V of the study, that is, those students for whom case studies were made, was not selected randomly. Preliminary work indicated that such a procedure was impractical, if not impossible, due to the lack of availability of a number of the drop-outs who were out of the state. Preliminary work also indicated that, even if all drop-outs were equally available, some drop-outs were much more desirable than others for purposes of case studies. Consequently, the sample of from 80 to 100 subjects for whom case studies were made was chosen from the drop-out sample used in Sections I, II, III and IV of the project in terms of: 1) the availability of the subject, and 2) information obtained from school officials concerning the complexity of factors involved in the case.

SECTION I

THE HOLDING POWER OF IOWA PUBLIC HIGH SCHOOLS

Grades Nine Through Twelve

The holding power for the 73 public high schools in this study was 80.4 per cent. The data in Table 5 show that of the 13,418 students who entered the ninth grade of these schools in the years 1950, 1951 and 1952, 1,418 transferred out, 2,354 dropped out and 9,646 remained to graduate. The number who graduated divided by the number entering less the transfers, yields a holding power of 80.4 per cent. Stated differently, the drop-out rate for grades nine through twelve in these 73 high schools was 19.6 per cent.

R

Since the sample of 73 high schools is a stratified random sample in which the proportion of small high schools is not as large as the proportion of large high schools, the total holding power for the sample is not exactly representative of the total holding power of all public high schools in Iowa. The drop-out rates in the small high schools of Groups I and II were 13.5 per cent and 12.7 per cent respectively and somewhat smaller than the drop-out rates in the large high schools in Groups III and IV, which were 17.8 per cent and 24.9 per cent respectively. Since the schools in the groups were randomly selected and include from 5.7 per cent to 26.5 per cent of the schools in each size group in the state, the determined drop-out rates for each size group are probably very close to the true drop-out rates for each size group.

The drop-out rate for all schools in the sample, however, is slightly higher than the drop-out rate for all high schools in Iowa due to the bias introduced by including a higher percentage of large high schools in the sample than is true for the state as a whole. If an exact proportion of the small high schools in Iowa were included in the sample, the drop-out rate would be 15.8 per cent and the holding power would be 84.2 per cent.

These calculations are based on the estimated drop-outs for the entire state based upon the actual drop-outs in the sample as shown in Table 2. Transfers were subtracted from the total high school population in calculating the drop-out rate. Although the U. S. Office of Education study published in 1954, under the title, High School Retention by States,[1] reports a drop-out rate of 24.4 per cent for Iowa high schools, this study was based on 1949-50 data and included students who transferred in and out of the state.

The 15.8 per cent drop-out figure determined in this study is probably more accurate than the U. S. Office of Education figure, since it is based on more recent data (1954-56) and excludes transfer students. It is known from U. S. Census Bureau data that the emigration from Iowa has been larger than the immigration for several years, therefore, the U. S. Office of Education study by counting transfer students would embody a

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[1] Ibid, p. 4.

Table 5
CHARACTERISTICS OF THE SAMPLE OF 73 SCHOOLS WITH RESPECT TO DROP-OUT RATE AND TRANSFER RATE

Public High Schools Group	No.	Number of Students Who Entered Ninth Grade in Fall of 1950, 1951 and 1952	Number Graduated	Number Who Transferred Out	Number Who Dropped Out	Drop-Out Rate	Transfer Rate
I	32	1,665	1,271	196	198	13.48%	11.77%
II	17	1,923	1,522	179	222	12.73%	9.72%*
III	15	4,039	2,930	474	635	17.81%	11.74%
IV	9	5,791	3,923	569	1,299	24.88%	9.83%
Total	73	13,418	9,646	1,418	2,354	19.62%	10.78%

*The number of transfers from one school in Group II was not available for this computation. Therefore, the number of graduates and drop-outs from this school were excluded in the computation of the transfer rate for Group II schools. The figures used were 179/1,842.

larger number of students leaving the state than entering and the drop-out rate so calculated would be higher than it actually is. It is also known from other drop-out studies that the drop-out rate has been decreasing slightly each year since World War II. Therefore, the more recent the study the lower the drop-out rate is likely to be, especially on a state-wide basis.

Contrary to some earlier studies, this study shows that the drop-out rate in the small public high schools in Iowa is less than the drop-out rate in the large high schools. The lowest drop-out rate, 12.7 per cent, was found in Group II schools (enrollments from 100 to 249) and the highest drop-out rate, 24.9 per cent, was in Group IV schools (enrollments of 500 and over). At the same time, the transfer rates were only slightly different. Actually, for Group II and Group IV schools the transfer rates were almost identical. Consequently, the differences in drop-out rates cannot be accounted for by students transferring in larger proportions from one size group of schools than from another.

R

Eighth Grade Graduates

The holding power of a high school or group of high schools might be affected considerably by the proportion of students entering high school from elementary schools. If a large proportion of elementary school students do not continue to a local high school, it is probable that the high school holding power will be increased due to the elimination of the less able students before the ninth grade.

R

As may be seen from Table 5, the Group IV high schools (enrollments 500 and over) lost about 11 per cent more entering ninth grade students than did the schools in Group I (enrollments from 10 to 99). This might be explained in part by the elimination of a greater proportion of eighth grade graduates before entering the ninth grade in rural areas than in the cities.

The purpose of this part of the study was to determine what proportion of eighth grade graduates drop out of school before entering the ninth grade for those elementary schools which serve as feeders to the high schools in the study. In other words, is there a notable loss of students between the eighth and ninth grades and are there important differences among the four size groups of schools in this respect?

R

The facts ~~presented in Table 6~~ do not support the hypothesis that a greater proportion of eighth grade graduates of the elementary schools feeding small high schools fail to enter high school than do graduates of the elementary schools feeding large high schools. On the contrary, the loss of eighth grade graduates is slightly less for the small schools, 3.8 per cent, than for the large schools, 4.5 per cent.

Although students who complete the eighth grade have satisfied the compulsory school attendance law in Iowa, it is encouraging that more than 95 per cent continue in school. The Iowa compulsory attendance law requires all children to attend school until they reach the age of sixteen or complete the eighth grade, whichever they attain earlier.

It might be speculated that a fairly large proportion of elementary students reach the age of sixteen before completing the eighth grade and drop out at that point. It may be seen in Table 7, however, that only 24 out of 537 pupils, or 4.4 per cent, who withdrew between the eighth and ninth grades were sixteen years of age or older.

Table 6
NUMBER AND PER CENT OF EIGHTH GRADE GRADUATES DROPPING OUT BETWEEN THE EIGHTH AND NINTH GRADES BY SIZE GROUPS

	1950			1951			1952			Total		
Group I (10-99)	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Number of 8th Grade Graduates	284	289	573	295	262	557	280	258	538	859	809	1,668
Number Dropping Before 9th Grade	9	5	14	20	9	29	15	6	21	44	20	64
Per Cent of Drop-Outs Between 8th and 9th	3.2	1.7	2.4	6.9	3.4	5.2	5.3	2.4	3.9	5.1	2.4	3.8
Group II (100-249)												
Number of 8th Grade Graduates	334	310	644	321	284	605	301	332	633	956	926	1,882
Number Dropping Before 9th Grade	18	8	26	12	6	18	12	10	22	42	24	66
Per Cent of Drop-Outs Between 8th and 9th	5.4	2.6	4.4	3.7	2.1	2.9	4.0	3.0	3.4	4.3	2.5	3.5
Group III (250-499)												
Number of 8th Grade Graduates	766	640	1,406	644	678	1,322	694	666	1,360	2,104	1,984	4,088
Number Dropping Before 9th Grade	35	18	53	33	14	47	29	22	51	97	54	151
Per Cent of Drop-Outs Between 8th and 9th	4.5	2.8	3.8	5.1	2.1	3.5	4.2	3.5	3.8	4.5	2.7	3.6

(Table 6 Continued on Page 14)

Table 6 (Continued)

	1950			1951			1952			Total		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Group IV (500-over)												
Number of 8th Grade Graduates	858	882	1,740	907	924	1,831	1,005	1,060	2,065	2,770	2,866	5,636
Number Dropping Before 9th Grade	63	26	89	53	30	83	56	28	84	179	77	256
Per Cent of Drop-Outs Between 8th and 9th	7.2	2.8	5.1	5.8	3.3	4.5	5.6	2.7	4.0	6.4	2.7	4.5
Total All Groups												
Number of 8th Grade Graduates.										6,689	6,585	13,274
Number Dropping Before 9th Grade										362	175	537
Per Cent of Drop-Outs Between 8th and 9th										5.4	2.6	4.0

Table 7
CHRONOLOGICAL AGE OF STUDENTS WHO DROPPED OUT OF SCHOOL BETWEEN THE EIGHTH AND NINTH GRADES

Age in Years	Group I			Group II			Group III			Group IV			All Groups		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
13	6	1	7	6	6	12	7	7	14	13	5	18	32	19	51
14	26	14	40	28	17	45	57	34	91	107	50	157	218	115	333
15	11	5	16	8	1	9	29	12	41	49	14	63	97	32	129
16	1	0	1	0	0	0	4	1	5	10	8	18	15	9	24
Totals	44	20	64	42	24	66	97	54	151	179	77	256	362	175	537
Means	14.1	14.1	14.1	14.0	13.8	13.9	14.3	14.1	14.2	14.3	14.3	14.3	14.3	14.2	14.2

SECTION II

RELATIONSHIPS BETWEEN INTELLIGENCE, SCHOLASTIC ACHIEVEMENT AND PERSISTENCE IN HIGH SCHOOL*

The purpose of this section of the study was to investigate differences in intelligence test scores, high school grade point averages, achievement test scores, and elementary grade point averages for the samples of drop-outs and persisters from Iowa secondary schools identified in the general introduction to this report.

Instruments, Procedures and Design

Instruments. The primary instrument used as the measure of achievement was the battery of Iowa Tests of Educational Development. These tests consist of a battery of nine objective tests designed to provide a comprehensive and dependable yardstick of the general educational development of the high school pupil. This measure was used so that a common index of scholastic achievement would be available for all students.

The individual tests in the battery are as follows:

1. Understanding of Basic Social Concepts
2. Background in the Natural Sciences
3. Correctness and Appropriateness of Expression
4. Ability to do Quantitative Thinking
5. Ability to Interpret Reading Materials in Social Studies
6. Ability to Interpret Reading Materials in the Natural Sciences
7. Ability to Interpret Literary Materials
8. General Vocabulary
9. Uses of Sources of Information

These sub-tests are intended to measure the student's ability to do critical thinking in the broad areas designated. They are concerned not only with what a pupil has learned, in the cumulative sense, but also with how well he can use whatever he has learned in acquiring, interpreting, and evaluating new ideas, in relating new ideas to old, and in applying broad concepts and generalizations to new situations or to the solution of problems.

Further factual data were secured from school records and school faculties. The measures of intelligence, the elementary grades scholastic record, and the high school grade point average were secured from the permanent record cards of the students in the schools involved.

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*For the complete report on this phase of the study see Donald A. Green, "A Study of the Relationship Between Grades, Ability, and Achievement of Secondary School Pupils and School Persistence," Unpublished Ph. D. Dissertation, The State University of Iowa, 1958.

The scholastic aptitude measure available in most of the schools studied was the *Otis Quick Scoring Mental Ability Tests*,[1] a series of sub-tests of relatively simple design that can be easily administered within a class hour and quickly scored by the staff. The Alpha, Beta, and Gamma series allow the complete coverage of grades one through twelve by tests designed to work together and possessing alternate forms that correlate highly with each other.

Since a preliminary check revealed that the majority of the schools used the Otis Group Intelligence Tests as the measure of capacity, all available intelligence test scores other than the Otis were converted to their Otis equivalent using the results of an equivalency study conducted by the Bureau of Pupil Guidance of the Chicago Public School System[2] as the basis of the conversion.

M

The high school grade point average was taken from the school records. The value of 4 was assigned to an *A* grade, 3 to a *B* grade, 2 to a *C* grade, 1 to a *D* grade, and 0 to an *F* grade. In the few cases where the school marked pupils on the basis of 70 as passing, and 100 as perfect, the administration's interpretation of the letter equivalent was used as the basis for converting the results to a grade point average similar to the rest of the schools.

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The elementary grade scholastic record of each individual was taken from the school records where such records on the student existed. Because of the diversity in the methods of grading achievement on the elementary level, the individuals were classified as being *Below Average*, *Average*, or *Above Average* in achievement in their grade school work in comparison with other pupils in the same school.

Procedures. The collection of data utilized in this and the companion studies was made by a team of research workers visiting the schools in the sample. Personal data from the school records, which included cumulative folders, permanent record cards, grade sheets, and room registers were secured for each individual studied. Information not available from these sources was secured from the administrators and teachers of each school.

In most cases the profile card issued by the Iowa Testing Bureau reporting the individual's scores was located within the cumulative record of each individual studied. To secure uniformity of data, only the ninth grade scores were utilized. With the exception of the few drop-outs who entered the ninth grade and dropped before taking the tests in October, this provided a measure of achievement for all individuals in the sample. Whenever the profile card could not be located in the school records of the student, it was secured from the files of the Iowa Testing Bureau at the State University of Iowa.

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[1] Otis, A. S., *Otis Quick Scoring Mental Ability Tests*, World Book Company, Yonkers, New York.

[2] Lund, K. W. and Engelhart, M. D., "Equivalence of Intelligence Quotients of Live Group Intelligence Tests," Bureau of Pupil Guidance, Chicago Public Schools, Chicago, Illinois.

Once the name of a particular student had been drawn for inclusion in the sample, every attempt was made to secure complete information with respect to the measures utilized in this investigation. Where no information was available for a particular pupil included in the sample, the name of that pupil was discarded and the name of another pupil was chosen using replacement sampling procedures. Where data were incomplete on a particular pupil, that pupil was retained in the sample even though parts of the total analysis could not utilize data for him. It was believed that if the sample had been limited to those subjects for whom complete information was available, two biases would have occurred. These were: (1) Those drop-outs who withdrew in the first and second years of the secondary school would have been under-represented; and (2) Pupils in schools possessing the most extensive systems of records would have been over-represented.

A trial use of the instruments and the procedure was undertaken using schools within the sample. Necessary refinements were made after the initial results of such a trial run were evaluated independently by the members of the research team.

The statistical design utilized in the treatment of these four basic types of data vary, as do the hypotheses formulated to test the relationships that existed within and between the factors of drop-out and persister and the criterion variables under consideration. The following section presents the criterion variables with a short discussion of the statistical design associated with them in this study.

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Design. The Lindquist Type VI design was used for investigating the difference in mean scores on the Iowa Tests of Educational Development, and the other three variables of intelligence, grade point average, and the elementary school achievement record for each of the following treatments: (1) Drop-out - Persister; (2) Sex; and (3) School Size. The use of this design permits the simultaneous testing of the hypotheses associated with the variables under consideration. In this sense, it represents a highly efficient design. Furthermore, the use of this design permits a maximal number of degrees of freedom in the error term used in testing the significance of the observed differences, thereby making it a much more powerful design than would have been possible had each hypothesis been tested separately.

The following hypotheses were investigated and the results reported with respect to intelligence, high school grade point, and the composite scores of the ITED:

1. There is no difference between the means of scores on the above factors for the populations of drop-outs and persisters represented in this study.

2. There is no difference between the means for the populations of male drop-outs and male persisters represented in this study.
3. There is no difference between the means for the populations of female drop-outs and female persisters represented in this study.
4. The difference between the means for the male drop-outs and the male persisters is the same as the difference between the means for the female drop-outs and the female persisters.
5. The differences between the means of the drop-outs and the persisters are the same among the various school size groups represented in this study.
6. The differences between the means of males and females are the same among the various school size groups represented in this study.
7. There is no difference between the means of the male and female drop-outs and persisters from the various school size groups represented in this study.

Hypothesis 7 represents the second order interaction and Hypotheses 4, 5, and 6 represent first order interactions associated with statistical tests of the main effects specified in Hypotheses 1, 2, and 3. Because of the ways in which significant interaction effects act to cloud the accurate interpretation of significant main effects, it was decided to test all possible interaction effects in this investigation.

Each of these hypotheses stated in the form of a question is listed below in the same order as the list of statistical hypotheses. These questions are as follows:

1. Do drop-outs, on the average, score significantly lower in intelligence test scores, in high school grade point averages, and on the Iowa Tests of Educational Development than do persisters?
2. Do male drop-outs, on the average, score significantly lower in intelligence test scores, in high school grade point averages, and on the Iowa Tests of Educational Development than do male persisters?
3. Do female drop-outs, on the average, score significantly lower in intelligence test scores, in high school grade point averages, and on the Iowa Tests of Educational Development than do female persisters?
4. Are the differences between male drop-outs and male persisters for each of the measures utilized in this study significantly greater than the differences between female drop-outs and female persisters on each of the same measures?
5. Are the differences between drop-outs and persisters for each of the measures utilized in this study significantly greater in one school size group than in another?
6. Are the differences between males and females for each of the measures utilized in this study significantly greater in one school size group than in another?

over for 7.

indicate briefly
Affirmative or Negative
response to 1.→7. from
data on following pages.

in all 3 areas:
I.Q., Grade Point,
& Achievement
(ITED)

7. Are the differences between the male drop-outs and male persisters from each of the various school size groups significantly greater than the differences between the female drop-outs and the female persisters from each of the various school size groups for each of the measures utilized in this study?

Findings

The results of this section of the study along with some interpretation drawn from them are presented under five major headings: 1. Intelligence, 2. High School Grade Point Average, 3. Achievement - Iowa Tests of Educational Development, 4. Elementary Grade Point Average, and 5. Talented Students.

The essential data used in the statistical analysis of the first three headings are presented in summary form following the pattern suggested by Lindquist for the Type VI design. The relationship of the essential data under the fourth heading was investigated by a chi-square test of independence. Those means that enter into a significant relationship have been starred in the presentation of the data. In these summary tables, the A-Effect is the male-female effect, the B-Effect is the drop-out - persister effect, and the C-Effect is the school size effect. The school size group category is indicated by C-1, with enrollments from 10 to 99, C-2 with enrollments from 100 to 249, C-3 with enrollments from 250 to 499 and C-4 with enrollments of 500 or more. All possible main effects and interaction effects have been tested for significance.

Tables of mean scores and summary tables of statistical tests of significance are presented followed by statements of specific hypotheses tested and conclusions regarding the acceptance or rejection of each hypothesis.

1. Intelligence

Tables 8, 9, 10 and 11 present data relative to mean scores for the analysis of intelligence test scores for drop-outs and persisters included in this investigation.

Essential data relative to the analysis of variance performed to test differences in intelligence test scores for male and female drop-outs and persisters from schools of various size groups are presented in Table 12.

Listed below are each of the specific hypotheses tested relative to intelligence test scores and statistical conclusions reached regarding the acceptance or the rejection of each hypothesis.

1. There is no difference in the mean intelligence test score of the drop-outs and the mean intelligence test score of the persisters represented in this investigation. Table 8 shows the mean I. Q. of the drop-outs to be 96.6 while the mean I. Q. of the persisters is 106.4. This difference of almost 10 I. Q. points was large enough to be statistically significant. Therefore, this hypothesis was rejected.

2. There is no difference between the mean intelligence test score of the males and the mean intelligence test score of the females represented in this investigation. Table 8 shows the mean I. Q. of the males to be 100.1 while the mean I. Q. of the females was 102.9. There is not a large difference in mean I. Q. between the males and females represented in this study, but this difference of approximately 3 I. Q. points was large enough to be statistically significant. Therefore, this hypothesis was rejected.
3. There are no differences in the mean intelligence test scores among the various school size groups represented in this investigation. Table 9 shows the mean I. Q. for all students among schools of various size groups to be as follows: Group I - 102.6, Group II - 101.2, Group III - 99.7, and Group IV - 102.9. The differences among these mean I. Q. 's were not large enough to be statistically significant. Therefore, this hypothesis was accepted.
4. The difference between the mean intelligence test scores of the male drop-outs and the male persisters is the same as the difference between the mean intelligence test scores of the female drop-outs and the female persisters represented in this investigation. Table 8 shows the mean I. Q. of the male drop-outs to be 93.8 and the mean I. Q. of the male persisters to be 106.4 - a difference of 12.6 I. Q. points. The mean I. Q. of the female drop-outs was 99.4 while the mean I. Q. of the female persisters was 106.4 - a difference of only 7 I. Q. points. The difference between 12.6 and 7 was 5.6 I. Q. points which was large enough to be statistically significant. Therefore, this hypothesis was rejected.

Table 8

THE MEANS OF THE INTELLIGENCE TEST SCORES FOR MALE AND FEMALE DROP-OUTS AND PERSISTERS AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

		Male		Female		Persistence
	Size Group	Means for Size Groups	Cell Means	Means for Size Groups	Cell Means	Category (B) Means
Drop-Out	I	93.6	93.8	101.5	99.4	96.6
	II	91.6		98.2		
	III	93.4		98.6		
	IV	97.7		98.4		
Persister	I	108.2	106.4	107.3	106.4	106.4
	II	106.4		108.7		
	III	103.8		103.1		
	IV	108.1		107.8		
Sex Group (A) Means		100.1		102.9		

Table 9
THE MEANS OF THE INTELLIGENCE TEST SCORES FOR ALL STUDENTS AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

Category		Mean
Group I	(C1)	102.6283
Group II	(C2)	101.2150
Group III	(C3)	99.7267
Group IV	(C4)	102.9875

Table 10
THE MEAN INTELLIGENCE QUOTIENTS OF THE DROP-OUTS AND PERSISTERS BY SCHOOL SIZE

	Mean	
Category	Drop-Out	Persister
Group I	97.5266	107.7300
Group II	94.8900	107.5400
Group III	96.0066	103.4466
Group IV	98.0312	107.9437

Table 11
THE MEAN INTELLIGENCE QUOTIENTS OF THE MALES AND FEMALES BY SCHOOL SIZE

	Mean	
Category	Male	Female
Group I	100.8566	104.4000
Group II	99.0000	103.4300
Group III	98.6200	100.8333
Group IV	102.8750	103.1000

Table 12
ANALYSIS OF VARIANCE FOR INTELLIGENCE TEST SCORES

Source	df	Ms	F
Between Schools	47	47.1080	
Size Groups (C)	3	113.0291	2.65
Error (b)	44	42.6134	
Within Schools	144	88.2065	
Sex (A)	1	365.4774	7.10**
Drop-Out - Persister (B)	1	4610.8974	77.56**
AB	1	385.6211	8.03**
AC	3	30.9974	.60
BC	3	55.7726	.94
ABC	3	28.0175	.58
Error W	132	52.9953	
Error 1 (W)	44	51.4911	
Error 2 (W)	44	59.4466	
Error 3 (W)	44	48.0483	
Total	191		

**Significant at 1% level.
A = male-female effect
B = drop-out - persister effect
C = school size effect

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5. The difference between the mean intelligence test scores of the drop-outs and the persisters is the same among the various school size groups represented in this investigation. Table 10 shows the difference in mean I. Q. scores between drop-outs and persisters to be approximately 10 points for Group I schools, 13 points for Group II schools, 7 points for Group III schools, and 9 points for Group IV schools. The differences between these differences - e. g., the difference between 10 and 13 I. Q. points, between 10 and 7 I. Q. points, etc. - were not large enough to be statistically significant. Therefore, this hypothesis was accepted.
6. The difference between the mean intelligence test scores of the males and females is the same among the various school size groups represented in this investigation. Table 11 shows the difference in mean I. Q. scores between males and females from Group I schools to be approximately 4 I. Q. points, from Group II schools to be approximately 4 I. Q. points, from Group III schools to be approximately 2 I. Q. points, and from Group IV schools to be approximately 1.7 I. Q. points. The differences between these differences - e. g., the difference between 4 and 2 I. Q. points,

between 2 and 1.7 I. Q. points, etc. - were not large enough to be statistically significant. Therefore, this hypothesis was accepted.

7. There is no difference between the mean intelligence test scores of the male and female drop-outs and persisters among the various school size groups represented in this investigation. Table 8 shows the mean I. Q. scores for both male and female drop-outs and persisters from each school size group. In order to interpret this analysis, Table 8 should be read as follows: The difference between the mean I. Q. of the male drop-outs in Group I schools (93.6) and the male persisters in Group I schools (108.2) is approximately 15 I. Q. points. This procedure should be followed for each pair of means involved. When all of these differences were analyzed together to see if the differences among the differences were statistically significant, they were found not to be. Therefore, this hypothesis was accepted.

2. High School Grade Point Average

Tables 13, 14, 15 and 16 present data relative to mean scores utilized in the analysis of high school grade point averages for drop-outs and persisters included in this investigation.

Essential data relative to the analysis of variance performed to test differences in high school grade point averages for male and female drop-outs and persisters from schools of various size groups are presented in Table 17.

Each of the specific hypotheses tested relative to high school grade point averages and statistical conclusions reached regarding the acceptance or rejection of each hypothesis follows.

1. There is no difference in the mean high school grade point average of the drop-outs and the mean high school grade point average of the persisters represented in this investigation. Table 13 shows the mean high school grade point average of the drop-outs in this study to be 1.5 while it is 2.5 for the persisters. This difference of one full point in mean grade point average between the drop-outs and the persisters was large enough to be statistically significant. Therefore, this hypothesis was rejected.
2. There is no difference between the mean high school grade point average of the males and the mean high school grade point average of the females represented in this investigation. Table 13 shows the mean high school grade point average of the males in this study to be 1.8 while it is 2.2 for the females. While this is not a large difference, it was large enough to be statistically significant. Therefore, this hypothesis was rejected.
3. There are no differences in the mean high school grade point averages among the various school size groups represented in this investigation. Table 14 shows the mean high school grade point

Table 13
THE MEANS OF THE HIGH SCHOOL GRADE POINT AVERAGES FOR MALE AND FEMALE DROP-OUTS AND PERSISTERS AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

		Male		Female		Persistence
	Size Group	Means for Size Groups	Cell Means	Means for Size Groups	Cell Means	Category (B) Means
Drop-Out	I	1.4	1.3	1.9	1.8	1.5
	II	1.2		1.7		
	III	1.2		1.6		
	IV	1.3		1.7		
Persister	I	2.3	2.3	2.8	2.7	2.5
	II	2.2		2.8		
	III	2.2		2.4		
	IV	2.3		2.6		
Sex Group (A) Means		1.8		2.2		

Table 14
THE MEANS OF THE HIGH SCHOOL GRADE POINT AVERAGES FOR ALL STUDENTS AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

Category		Mean
Group I	(C1)	2.1075
Group II	(C2)	1.9680
Group III	(C3)	1.8727
Group IV	(C4)	1.9933

Table 15
THE MEAN HIGH SCHOOL GRADE POINT AVERAGES OF THE DROP-OUTS AND PERSISTERS BY SCHOOL SIZE

	Mean	
Category	Drop-Out	Persister
Group I	1.6664	2.5486
Group II	1.4393	2.4965
Group III	1.4240	2.3213
Group IV	1.5328	2.4538

Table 16
THE MEAN HIGH SCHOOL GRADE POINT AVERAGES OF THE MALES AND FEMALES BY SCHOOL SIZE

	Mean	
Category	Males	Females
Group I	1.8756	2.3394
Group II	1.6840	2.2519
Group III	1.7213	2.0240
Group IV	1.8461	2.1405

Table 17
THE ANALYSIS OF VARIANCE FOR THE HIGH SCHOOL GRADE POINT AVERAGE

Source	df	Ms	F
Between Schools	64	.2940	
Size Groups (C)	3	.7310	2.68
Error (b)	61	.2725	
Within Schools	195	.5194	
Sex (A)	1	11.9498	52.71**
Drop-Out - Persister (B)	1	56.7218	331.32**
AB	1	.1675	1.48
AC	3	.2470	1.09
BC	3	.1105	.65
ABC	3	.0689	.61
Error W	183	.1702	
Error 1 (W)	61	.2267	
Error 2 (W)	61	.1712	
Error 3 (W)	61	.1130	
Total	259		

**Significant at 1% level.
A = male-female effect
B = drop-out - persister effect
C = school size effect

average for the various school size groups to be as follows: Group I - 2. 1, Group II - 1. 9, Group III - 1. 87, and Group IV - 1. 99. The differences existing among these various mean high school grade point averages were not large enough to be statistically significant. Therefore, this hypothesis was accepted.

4. The difference between the mean high school grade point average of the male drop-outs and the male persisters is the same as the difference between the mean high school grade point average of the female drop-outs and the female persisters represented in this investigation. Table 13 shows the mean high school grade point average of the male drop-outs to be 1. 3 and the mean high school grade point average of the male persisters to be 2. 3 - a difference of 1. 0. The mean high school grade point average of the female drop-outs was 1. 8 and the mean high school grade point average of the female persisters was 2. 7 - a difference of 0. 9. The difference between these differences (1. 0 - 0. 9) was not large enough to be statistically significant. Therefore, this hypothesis was accepted.
5. The difference between the mean high school grade point average of the drop-outs and the persisters is the same among the various school size groups represented in this investigation. Table 15 shows the difference in mean high school grade point average between drop-outs and persisters to be approximately 0. 9 for Group I schools, 1. 0 for Group II schools, 0. 9 for Group III schools, and 0. 9 for Group IV schools. The obviously very small differences between these differences were not statistically significant. Therefore, this hypothesis was accepted.
6. The difference between the mean high school grade point average of the males and females is the same among the various school size groups represented in this investigation. Table 16 shows the difference in mean high school grade point average between males and females in Group I schools to be approximately 0.5, for Group II schools to be approximately 0. 6, for Group III schools to be approximately 0. 3, and for Group IV schools to be approximately 0. 3. The differences between these differences were obviously not large and were not found to be statistically significant. Therefore, this hypothesis was accepted.
7. There is no difference between the mean high school grade point averages of the male and female drop-outs and persisters among the various school size groups represented in this investigation. Table 13 shows the mean high school grade point averages for both male and female drop-outs and persisters from each school size group. Table 13 should be read as follows: The difference in mean high school grade point average between the male drop-outs in Group I schools (1. 4) and the male persisters in Group I schools

(2. 3) was approximately 0. 9. This procedure should be followed for each pair of means involved. When all of these differences were analyzed together to see if the differences among the differences were statistically significant, they were found not to be. Therefore, this hypothesis was accepted.

3. Achievement - Iowa Tests of Educational Development

In reporting on the analysis with respect to the Iowa Tests of Educational Development, findings are presented for the composite scores. While findings regarding some of the interaction hypotheses differed slightly from those which can be seen below for the composite scores, all of the findings pertaining to differences between drop-outs and persisters are consistent for each of the sub-tests of the Iowa Tests of Educational Development (ITED).

Tables 18, 19, 20 and 21 present data relative to means of the composite scores on the ITED for drop-outs and persisters included in this investigation.

Essential data relative to the analysis of variance performed to test differences in ITED composite scores for male and female drop-outs and persisters from schools of various size groups are presented in Table 22.

Each of the specific hypotheses tested relative to ITED composite scores and statistical conclusions reached regarding the acceptance or rejection of each hypothesis follow.

1. There is no difference in the mean composite score on the ITED of the drop-outs and the mean composite score on the ITED of the persisters represented in this investigation. Table 18 shows the mean composite ITED score of the drop-outs in this study to be 8. 8 while it is 11. 9 for the persisters. This difference of 3. 1 points was large enough to be statistically significant. Therefore, this hypothesis was rejected.
2. There is no difference between the mean composite score on the ITED of the males and the mean composite score on the ITED of the females represented in this investigation. Table 18 shows the mean composite ITED score of the males in this study to be 10. 1 while it is 10. 5 for the females. This difference of 0. 4 points was not large enough to be statistically significant. Therefore, this hypothesis was accepted.
3. There are no differences in the mean composite score on the ITED among the various school size groups represented in this investigation. Table 19 shows the mean composite ITED score for the various school size groups to be as follows: Group I - 10. 5, Group II - 9. 9, Group III - 10. 1, and Group IV - 10. 7. The differences existing among these various mean composite ITED scores were not large enough to be statistically significant. Therefore, this hypothesis was accepted.

Table 18
THE MEANS OF THE COMPOSITE SCORE ON THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT FOR MALE AND FEMALE DROP-OUTS AND PERSISTERS AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

		Male		Female		Persistence Category (B) Means
	Size Group	Means for Size Groups	Cell Means	Means for Size Groups	Cell Means	
Drop-Out	I	8.7	8.2	9.8	9.4	8.8
	II	7.4		8.6		
	III	7.8		9.6		
	IV	8.6		9.3		
Persister	I	12.0	12.1	11.5	11.7	11.9
	II	11.9		11.9		
	III	11.9		11.3		
	IV	12.8		12.4		
Sex Group (A) Means		10.1		10.5		

Table 19
THE MEANS OF THE COMPOSITE SCORES ON THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT AMONG SCHOOLS OF THE VARIOUS SIZE GROUPS

Category		Mean
Group I	(C1)	10.5308
Group II	(C2)	9.9456
Group III	(C3)	10.1707
Group IV	(C4)	10.7819

Table 20
THE MEAN COMPOSITE SCORES ON THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT OF THE DROP-OUTS AND THE PERSISTERS BY SCHOOL SIZE

	Mean	
Category	Drop-Out	Persister
Group I	9.27	11.76
Group II	7.97	11.92
Group III	8.72	11.66
Group IV	8.96	12.58

Table 21
THE MEAN COMPOSITE SCORES ON THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT OF THE MALES AND FEMALES BY SCHOOL SIZE GROUP

	Mean	
Category	Males	Females
Group I	10.39	10.66
Group II	9.64	8.67
Group III	9.84	10.49
Group IV	10.71	10.85

Table 22
THE ANALYSIS OF VARIANCE FOR THE COMPOSITE SCORE ON THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT

Source	df	Ms	F
Between Schools	63	7.0843	
Size Groups (C)	3	7.3988	1.05
Error (b)	60	7.0686	
Within Schools	192	10.1041	
Sex (A)	1	11.4287	1.23
Drop-Out - Persister (B)	1	620.9753	100.27**
AB	1	42.0470	8.22**
AC	3	.8141	.09
BC	3	7.5581	1.22
ABC	3	1.1325	.22
Error W	180	6.8723	
Error 1 (W)	60	9.3073	
Error 2 (W)	60	6.1930	
Error 3 (W)	60	5.1166	
Total	255		

*Significant at the 1% level.
A = male-female effect
B = drop-out - persister effect
C = school size effect

4. The difference between the mean composite scores on the ITED of the male drop-outs and the male persisters is the same as the difference between the mean composite scores on the ITED of the female drop-outs and the female persisters represented in this investigation. Table 18 shows the mean composite ITED score for the male drop-outs to be 8.2 while the mean composite ITED score for the male persisters was 12.1 - a difference of 3.9 points. The mean composite ITED score for the female drop-outs was 9.4 while the mean composite ITED score for the female persisters was 11.7 - a difference of only 2.3 points. The difference between these differences (3.9 - 2.3) was large enough to be statistically significant. Therefore, this hypothesis was rejected.
5. The difference between the mean composite score on the ITED of the drop-outs and persisters is the same among the various school size groups represented in this investigation. Table 20 shows the difference in mean composite ITED score between drop-outs and persisters to be approximately 2.5 for Group I schools, 4.0 for Group II schools, 3.0 for Group III schools, and 3.5 for Group IV schools. The differences between these differences were not statistically significant. Therefore, this hypothesis was accepted.
6. The difference between the mean composite score on the ITED of the males and females is the same among the various school size groups represented in this investigation. Table 21 shows the difference in mean composite ITED scores between males and females to be approximately 0.27 for Group I schools, 0.97 for Group II schools, 0.65 for Group III schools, and 0.14 for Group IV schools. In Group II schools, this difference is seen to favor the males over the females. In each of the other three school size groups, mean ITED composite scores are higher for females than for males. The differences between these differences, however, were not statistically significant. Therefore, this hypothesis was accepted.
7. There is no difference between the mean composite scores on the ITED of the male and female drop-outs and persisters among the various school size groups represented in this investigation. Table 18 shows the mean ITED composite scores for both male and female drop-outs and persisters from each school size group. In order to interpret the data presented here, Table 18 should be read as follows: The difference in mean ITED composite scores between the male drop-outs in Group I schools (8.7) and the male persisters in Group I schools (12.0) was approximately 3 points. This procedure should be followed for each pair of means involved. When all of these differences were analyzed together to see if the differences among the differences were statistically significant, they were found not to be. Therefore, this hypothesis was accepted.

4. Elementary School Scholastic Record

The relationship between elementary school scholastic record and persistence in the secondary school was investigated separately for each sex in each school size group. Findings were reported in terms of statistical significance by means of the chi-square statistic. In every case a statistically significant chi-square was found to exist. A rough indication of the magnitude of the relationship present was determined by means of the contingency coefficient. In every case, there appeared to be a substantial positive relationship present, i. e., below average elementary grade point averages tended to be associated with drop-outs much more regularly than with persisters and above average grade point averages tended to be associated with persisters much more regularly than with drop-outs.

The elementary scholastic records for pupils included in this study were of such a nature that it was impossible to assign an exact numerical value to each pupil's record. Therefore, each pupil's record was classified according to one of the following three categories: (1) Below average, (2) Average, and (3) Above average. The chi-square statistic was then utilized in investigating differences existing between drop-outs and persisters as a whole, between male drop-outs and male persisters, and between female drop-outs and female persisters, with each school size group being considered separately in the analysis.

The *Below Average* classification consisted of those students in the sample whose elementary school records indicated they achieved less than a 2.0 grade point average during the elementary years of their formal schooling. The points assigned to the letter grades were identical to the ones used in the computation of the high school grade point average. Where other than letter grades were used, the equivalent letter grade was first determined from the school administrator before proceeding to the computation of the scholastic record.

The *Average* classification consisted of those students in the sample whose elementary school records indicated they achieved a grade point average between 2.0 and 2.99 during the elementary years of their formal preparation.

The *Above Average* classification consisted of those students in the sample whose elementary school records indicated they achieved a grade point average of 3.0 or higher during the elementary years of their formal education.

The following questions were investigated in this part of the study:

1. Is there any statistically significant association between the elementary school scholastic record of drop-outs and persisters within each school size group?
2. Is there any significant association between the elementary school scholastic record for boys who were drop-outs and boys who were persisters within each school size group?

3. Is there any significant association between the elementary school scholastic record for girls who were drop-outs and girls who were persisters within each school size group?

Tables 23 through 30 present the essential data for the findings. By observing the distribution of cell frequencies, an indication of the relationship may be noted. Beside each distribution appears the chi-square (χ^2) value and the contingency coefficient (C) computed from the distribution.

Table 23
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGES FOR MALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP I

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	37	19	5	$\chi^2 = 25.9654$
Persister	13	22	26	$C = .4189$

Table 24
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR FEMALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP I

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	11	17	19	$\chi^2 = 10.1215$
Persister	4	11	37	$C = .3046$

Table 25
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR MALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP II

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	31	8	7	$\chi^2 = 12.5787$
Persister	18	21	17	$C = .3313$

Table 26
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR FEMALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP II

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	16	8	7	$\chi^2 = 26.8419$
Persister	0	9	26	$C = .5377$

Table 27
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR MALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP III

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	24	14	0	$\chi^2 = 21.8812$
Persister	6	15	19	C = .4681

Table 28
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR FEMALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP III

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	19	13	6	$\chi^2 = 13.2151$
Persister	6	9	18	C = .3961

Table 29
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR MALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP IV

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	68	41	7	$\chi^2 = 51.3600$
Persister	23	47	46	C = .4258

Table 30
FREQUENCY DISTRIBUTION OF ELEMENTARY GRADE POINT AVERAGE FOR FEMALE DROP-OUTS AND PERSISTERS FROM SIZE GROUP IV

	Elementary Grade Point Average			
	Below Average	Average	Above Average	
Drop-Out	49	48	25	$\chi^2 = 43.0735$
Persister	12	45	69	C = .3847

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5. The Academically Talented Students

5.0. Considerable interest currently is being evidenced in the academically gifted pupil. Accordingly, it was thought appropriate to provide, as a supplementary portion in this investigation, some descriptive information pertaining to these pupils. For purposes of this analysis, the word "talented" referred to any pupil in the sample having a recorded intelligence quotient of 120 or higher.

From the original sample population, every drop-out with a measured I. Q. of 120 or more was matched with a persister on the basis of sex, intelligence quotient and school size. The Talented Student Questionnaire was completed for each student in order to supplement the information already procured through the use of the Personal Data Blank in the original survey. The descriptive analysis of the talented students represented in this investigation is based on the responses of 21 pairs of students. Since not all items on the questionnaire were answered by all students in the sample population, only those items yielding the most information were used.

The Talented Student Questionnaire was administered to each individual in each pair of students. (1) These data were added to the data already available from the Personal Data Blanks in the original population sample, and the two sets of data formed the basis for investigating the differences between the talented drop-out and the talented persister with respect to the eight criterion variables involved in the multiple correlation analysis. (2) A simple t-test of the differences in the mean scores of the two groups was used to determine any significant differences.

The multiplicity of other variables that entered into the descriptive process, in general, did not appear amenable to statistical analysis. However, as a basis for inference as to the characteristics of the typical talented drop-out as found in this study, such variables were invaluable.

As may be seen from Table 31 and Table 32, the total academically talented sub-population included 165 students. Of this group of 165 students, 29 were drop-outs and 136 were persisters.

Table 31

THE DISTRIBUTION OF THE TALENTED STUDENTS IN THE OVERALL SAMPLE POPULATION BY THE DROP-OUT-PERSISTER CATEGORY

	Male	Female	Total	Per cent of Total	Total in Overall Sample *	Per cent of Overall Sample
Drop-Out	10	19	29	17.6	735	3.9
Persister	68	68	136	82.4	917	14.8
Total	78	87	165	100.0	1652	10.0

R

*This number includes only those in the sample population with intelligence quotients recorded in their school records.

Table 32
THE DISTRIBUTION OF THE TALENTED STUDENTS IN THE OVERALL SAMPLE POPULATION BY SCHOOL SIZE GROUP

	Male	Female	Total	Per cent of Total	Total in Overall Sample*	Per cent of Overall Sample
Group I	10	6	16	9.6	213	7.9
Group II	10	9	19	11.5	186	10.2
Group III	22	18	40	24.4	456	8.7
Group IV	36	54	90	54.5	797	11.2
Total	78	87	165	100.0	1652	10.0

*This number includes only those in the sample population with intelligence quotients recorded in their school records.

A simple t-ratio technique was used to investigate the significance of the difference between the means of the talented drop-out group and the talented persister group with respect to the following criterion variables contained in the Personal Data Blank:

1. High School grade point average
2. Composite score of the Iowa Tests of Educational Development
3. Absence ratio
4. Extra-curricular activities
5. Father's occupational level

From Table 33 it may be seen that a statistically significant difference exists between the mean of the high school grade point averages obtained by the talented drop-outs and the mean of the high school grade point average of the talented persisters. However, with reference to the composite score on the Iowa Tests of Educational Development, there is no statistically significant difference between the means obtained for the two groups.

The data presented in Table 33 also show that there is a difference significant at the one per cent level of confidence between the mean absence ratio of the talented drop-outs and the mean absence ratio of the talented persisters. An absence ratio was computed for each subject for whom such data were available by dividing the total number of days that school was in session into the number of times the subject being investigated was absent according to the school records. Examination of Table 33 reveals that the talented drop-outs were less regular in attending school than were the talented graduates.

Participation in extra-curricular activities was measured by the number of different areas in which the subject was active. With reference to these activities, the talented persisters, on the average, appear to be more active in participation than the talented drop-outs. Examination of Table 33 indicates that this difference was significant at the one per cent

Table 33

THE SIGNIFICANCE OF THE DIFFERENCES BETWEEN THE MEANS OF THE HIGH SCHOOL GRADE POINT AVERAGES, THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE, THE ABSENCE RATIO, EXTRA-CURRICULAR ACTIVITIES AND FATHER'S OCCUPATIONAL LEVEL FOR THE TALENTED DROP-OUTS AND TALENTED PERSISTERS

	Means						
Criterion	Drop-Outs	Persisters	Differences	t	df	t(.01)	Level of Significance of Difference
High School Grade Point Average	2.18	3.25	1.07	6.02	19	2.861	1%
ITED Composite	15.6	17.0	1.4	.57	18	2.88	NS
Absence Ratio	.0771	.0265	.0346	165.0	16	2.92	1%
Extra-Curricular Activities	1.2	3.2	1.86	4.1	14	2.98	1%
Father's Occupational Level	4.47	4.57	.10	.22	17	2.90	NS

level of confidence. The practical significance of this finding is limited in view of the wide variation in length of school attendance between the two groups.

Differences between the talented drop-outs and the talented persisters with respect to the mean occupational level of the father were also investigated. The occupations were classified on the basis of a seven point scale adapted from the Warner scale.[1] As may be seen from Table 33 there is no statistically significant difference in the mean occupational level of the fathers of the talented drop-outs and the mean occupational level of the fathers of the talented persisters.

Of the 21 pairs of talented drop-outs and persisters included in the study, 15 pairs are females and 6 are males. Since the number of cases involved is too small to submit to statistical analysis for the items included on the Talented Student Questionnaire, only a few summary statements of the findings are presented.

Of the 15 pairs of females, 13 of the drop-outs were married as opposed to 2 of the persisters. Three of the drop-outs were employed and 12 were housewives. Of the persisters, 8 were in college, 4 were employed full-time, 1 was living at home with her parents, and 2 were housewives. The female persisters appeared to be making greater academic use of their talents than were the female drop-outs.

Of the 6 pairs of males, 4 of the drop-outs were employed full-time and 2 were in the armed services. Two of the persisters were still in college, 1 was unemployed, 1 in the armed services, and 2 were employed full-time.

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[1] Warner, W. L., Meeker, M., and Eells, K., Social Class in America, Science Research Associates, 1949, pp. 140-141.

SECTION III

NON-SCHOLASTIC FACTORS ASSOCIATED WITH DROP-OUTS*

The purpose of this section of the study was to investigate certain non-scholastic factors to determine which ones, if any, actually differentiate students who withdraw from public high schools in Iowa from students who graduate from these same high schools. The following factors studied were selected for investigation on the basis of what other studies of more limited scope or concerned with another geographical area had indicated to be of possible importance in differentiating drop-outs from persisters: absenteeism, participation in extra-curricular activities, residence with parents or guardians during high school, marital status of parents, occupational class of father, whether or not the mother worked, and educational attainment of the parents.

M

The number of students necessary to secure a five per cent sample of the estimated number of drop-outs for the entire state was selected from the schools included in the study in such a way that the number contributed by each size group was proportional to the estimated number of drop-outs in the total Iowa population of drop-outs contributed by all the schools of that group. The sample selected thus approaches representativeness of the total high school population in Iowa with respect to drop-outs. A total of 768 drop-outs were included in this five per cent proportionate sample. Students who persisted in school were paired with the drop-outs with respect to school attended, year of entry into the ninth grade, and sex. This group was randomly selected from the rosters of those entering students who graduated from high school.

Data on the subjects were secured from school records (including the cumulative folders, permanent record cards, grade sheets, and room registers), from the teachers and administrators in the schools, from city directories, and from the files of the county Agricultural Stabilization and Conservation offices.

Absenteeism

Differences between drop-outs and persisters with respect to absenteeism were investigated. An absence ratio was computed for each subject for whom the data were available by dividing the total number of days absent by the total number of days that school was in session during the time that the pupil was enrolled. Differences between drop-outs and persisters for each school size for boys and for girls were tested for significance using a Type VI analysis of variance design.[1]

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*The complete report and analyses are included in the study by Paul E. Opstad, "Non-Scholastic Factors Associated with Drop-Outs in Iowa High Schools," Unpublished Ph. D. Dissertation, the State University of Iowa, 1958.

The absence ratio for boys (drop-outs and persisters combined) was .057, significantly higher than that for girls which was .047. This difference of one per cent is significant beyond the five per cent level meaning that it could occur less than one time in twenty by chance alone. As was noted before, however, the difference obtained between boy drop-outs and boy persisters as compared with the difference obtained between girl drop-outs and girl persisters was for all practical purposes the same.

The Type VI design was used as a preliminary analysis for the purpose of investigating whether or not the differences in absenteeism between drop-outs and persisters could be investigated irrespective of size group and sex. The results of this analysis of variance were useful in determining whether or not the differences between drop-outs and persisters varied significantly from category to category. Since they did not, it was possible to investigate the difference between drop-outs and persisters for all groups combined and for both sexes. The significance of this difference was investigated using the critical ratio technique instead of the analysis of variance design so that a large-school bias could be avoided. The critical ratio technique permitted the inclusion of all subjects in the five per cent proportionate sample for whom absence data were available. R The difference between drop-outs and persisters for all school sizes combined and for both boys and girls together was statistically significant at the .001 per cent level meaning that the difference was so large that it could appear less than one time in one hundred thousand by chance alone. The average (mean) absence ratio for drop-outs was .085 indicating that the average drop-out was absent approximately fifteen days out of a school year of 180 days. The average (mean) absence ratio for persisters was .031 indicating that the average persister was absent approximately six days out of a school year of 180 days. Comparing drop-outs and persisters, then, a difference of nine days absent per school year was obtained (or, in terms of absence ratio, a difference of .054 or 5.4%). (See Table 34)

R

Although the extent of the difference in absenteeism between drop-outs and persisters was not affected by sex or by the school size, it was significantly affected by the grade levels from which the withdrawals occurred. The differences between drop-outs and persisters was greatest for those who withdrew during the ninth grade and generally least for those who withdrew during the twelfth grade.[2]

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[1] Lindquist, E. F., Design and Analysis of Experiments in Psychology and Education, Houghton Mifflin, 1953.

[2] Op. cit. pp. 53-54.

Table 34
PERCENTAGE OF ABSENTEEISM FOR DROP-OUTS AND PERSISTERS IN ALL SCHOOLS
(Five per cent proportionate sample)

Per Cent of Time Absent	Drop-Outs						Persisters					
	Male		Female		Total		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0 - 1	46	13	54	18	100	15	152	43	145	46	297	44
2 - 3	61	18	50	17	111	17	101	29	96	30	197	30
4 - 5	53	16	42	14	95	15	54	15	33	10	87	13
6 - 7	52	15	37	12	89	14	25	7	24	8	49	7
8 - 9	27	8	29	10	56	9	12	3	10	3	22	3
10 - 11	27	8	22	7	49	8	5	1	4	1	9	1
12 - 13	21	6	14	5	35	5	1	1	4	1	5	1
14 - 15	11	3	13	4	24	4	1	1	2	1	3	1
16 - 17	10	3	7	2	17	3						
18 and over	33	10	34	11	67	10						
Total	341	100	302	100	643	100	351	100	318	100	669	100
Average Per Cent of Time Absent	8.65%		8.34 %		8.50%		3.06%		3.05%		3.06%	

Difference between Male Drop-Outs and Male Persisters: 5.59

Significant at the .001% level.

Difference between Female Drop-Outs and Female Persisters: 5.29

Significant at the .001% level.

Difference between all Drop-Outs and all Persisters: 5.44

Significant at the .001% level.

The results indicate that absenteeism as measured by an absence ratio is a significant factor in differentiating drop-outs from persisters, that it is less significant in differentiating drop-outs who withdrew during the eleventh and twelfth grades, and that it is not significant in differentiating drop-outs from persisters for some school sizes if the drop-outs withdrew during the twelfth grade. Since only nine per cent of the drop-outs withdrew during the twelfth grade, absence ratio by itself is useful in predicting potential drop-outs.

Participation in Extra-Curricular Activities

M

Differences between drop-outs and persisters with respect to participation in extra-curricular activities were also investigated. Participation was measured by the number of different areas, such as music, speech or athletics, in which the subjects participated. Differences between drop-outs and persisters for each school size for boys and for girls were tested for significance using a Type VI analysis of variance design as was discussed in the section on absenteeism. Attention was called in the previous discussion on absenteeism to the fact, that since this type of analysis requires an equal number of subjects in each category for a particular size group, school means were used. Therefore, the mean number of areas in which the subjects participated was computed for each school in four separate categories: (1) male drop-outs, (2) female drop-outs, (3) male persisters, and (4) female persisters.

Girls (drop-outs and persisters combined) participated in more areas than did boys (2.2 areas for girls compared to 1.7 areas for boys). This difference is significant beyond the five per cent level meaning that it would occur less than one time in twenty by chance alone. The difference obtained between boy drop-outs and boy persisters, however, as compared with the difference obtained between girl drop-outs and girl persisters was for all practical purposes the same.

R

According to the measure of participation used in this study, participation was greater in the schools having an enrollment under 250 pupils. The mean number of areas in which subjects (drop-outs, persisters, boys, girls, all combined) from Group I schools participated was 2.4 as compared with 2.1 areas for subjects from Group II schools, 1.6 areas for subjects from Group III schools, and 1.5 areas for subjects from Group IV schools. Although there were differences among school sizes when all the subjects were taken together, there were no significant differences among school sizes with respect to the differences between drop-outs and persisters. This is to say that there were differences between drop-outs and persisters, but the amount of difference was not affected by school size.

As in the case of the factor of absenteeism, the Type VI design was used as a preliminary analysis for the purpose of investigating whether or not the differences in extra-curricular participation between drop-outs and persisters could be investigated irrespective of size group and sex. The results of this analysis of variance were useful in determining whether or not the differences between drop-outs and persisters varied significantly from category to category. Since they did not, it was possible to investigate the difference between drop-outs and persisters for all groups combined and for both sexes. The significance of this difference was investigated using the critical ratio technique instead of the analysis of variance design so that a large-school bias could be avoided. The critical ratio technique permitted the inclusion of all subjects in the five per cent proportionate sample for whom data regarding participation in extra-curricular activities were available. The difference between drop-outs and persisters for all school sizes combined and for both boys and girls together was statistically significant at the .001 per cent level, meaning that the difference was so large that it could appear less than one time in one hundred thousand by chance alone. The average (mean) number of areas in which drop-outs participated was .893. The average number of areas in which persisters participated was 2.462, a difference of approximately one and one-half areas. (See Table 35)

As was true for the factor of absenteeism, the extent of the difference between drop-outs and persisters was significantly affected by the grade levels from which the withdrawals occurred. The difference was greatest between persisters and those drop-outs who withdrew in the eleventh and twelfth grades.

The results indicate that participation in extra-curricular activities as measured by the number of areas participated in is a significant factor in differentiating drop-outs from persisters, that it is less significant in differentiating drop-outs who withdrew during the eleventh and twelfth grades, and that it is not significant in differentiating drop-outs from Group I schools who withdrew during the twelfth grade. R

The relationships between persistence and the particular areas of extra-curricular activities in which students participated were also studied, but the results contribute very little information of value in identifying potential drop-outs. This may be explained in part by the high proportion of drop-outs in grades nine and ten before students ordinarily participate in certain types of activities.

Only two areas, publications and drama and speech, provided a significant relationship between participation and persistence in school for all school sizes and for both sexes.

Table 35
PARTICIPATION IN EXTRA-CURRICULAR ACTIVITIES FOR DROP-OUTS AND PERSISTERS IN ALL SCHOOLS
(Five per cent proportionate sample)

	Drop-Outs						Persisters					
	Male		Female		Total		Male		Female		Total	
Number of Activities	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	149	49	111	40	260	45	49	14	24	8	73	11
1	102	34	81	29	183	32	71	20	50	16	121	18
2	37	12	55	20	92	16	100	28	67	21	167	25
3	12	4	20	7	32	5	68	19	74	23	142	21
4	0		7	3	7	1	46	13	55	17	101	15
5	3	1	1	.5	4	.8	13	4	33	11	46	7
6	0		1	.5	1	.2	5	1	10	3	15	2
7	0	—	0	—	0	—	4	1	3	1	7	1
Total	303	100	276	100	579	100	356	100	316	100	672	100
Average Number of Activities	.749		1.051		.893		2.197		2.760		2.462	

Difference between Male Drop-Outs and Male Persisters: 1.448

Significant at the .001% level.

Difference between Female Drop-Outs and Female Persisters: 1.709

Significant at the .001% level.

Difference between all Drop-Outs and all Persisters: 1.569

Significant at the .001% level.

The results show, however, that the students who participated in publications or drama and speech activities withdrew from school in smaller proportion than students who participated in other areas. (See Table 36) To infer a cause and effect relationship would not be justified. It could well be that the great majority of students who participated in these two activity areas would have continued through high school to graduation even if they had not participated in these areas, particularly since these activities come primarily during the last two years of high school and involve talents of an intellectual or academic nature.

Residence

This term refers to the people with whom the subjects lived during high school, i. e., whether they lived with their parents or with guardians or other than parents. Table 37 indicates that only five per cent of the drop-outs and only two per cent of the persisters lived with guardians rather than parents. The number of subjects affected by this factor is obviously too small to be of any practical importance in differentiating drop-outs from persisters.

The results of the chi-square test of independence indicate that the difference of three per cent between drop-outs and persisters is statistically significant, but the phi coefficients of .08 and .09 for boys and girls respectively indicate, as was stated above, that this factor is of no practical value in differentiating between drop-outs and persisters.

Home Background

The home background was classified as broken if the parents were separated, divorced, or if one or the other or both were deceased. It was classified as normal if the parents were married and living together.

Twenty-two per cent of the drop-outs and 11 per cent of the persisters came from broken homes. The relationship between home background and persistence in school was investigated using the chi-square test of independence and the phi correlation technique. The results indicate that this relationship was significant beyond the five per cent level for both boys and girls, but the extent of the relationship was slight as indicated by phi coefficients of .13 and .17 respectively. (See Table 38) R

Some differences occurred with respect to sex and size group categories. For boys the relationship was significant only for Group III and IV schools. For girls the relationship was significant, at approximately the same extent, for all but Group I schools. Table 38 presents the data for all groups combined.

Educational Attainment of Subjects' Parents

The educational attainment of the parents of the subjects was classified for the mothers and for the fathers using the following categories: (1) Did not graduate from high school, (2) Graduated from high school, and (3) Completed one or more years of school beyond high school. R

Table 36

DISTRIBUTION OF EXTRA-CURRICULAR ACTIVITY AREAS PARTICIPATED IN BY DROP-OUTS AND PERSISTERS FROM ALL SCHOOLS

(Five per cent proportionate sample)

Activity Area	Drop-Outs						Persisters					
	Male		Female		Total		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Inter-school Athletics	99	61	26	16	125	38	219	69	57	19	276	45
Intra-mural Athletics	14	9	23	14	37	11	40	13	63	21	103	17
Music	58	36	113	69	171	52	143	45	211	70	354	57
Publications	5	3	10	6	15	5	56	18	107	36	163	26
Drama-Speech	15	9	19	12	34	10	116	36	140	47	256	41
School Service	25	15	35	21	60	18	85	27	130	43	215	35
Clubs	36	22	61	37	97	30	135	42	184	61	319	52
Total Participants	163		163		326		318		301		619	

Results of chi-square (x^2) tests of independence between participation and persistence in school and phi (ϕ) correlation coefficients:

	Boys		Girls	
	x^2	ϕ	x^2	ϕ
Inter-school Athletics	3.181*		.642*	
Intra-mural Athletics	1.72*		3.264*	
Music	3.903	.09	.030*	
Publications	20.581	.21	48.511	.32
Drama-Speech	40.455	.29	57.031	.35
School Service	7.929	.13	21.763	.22
Clubs	20.877	.21	23.844	.23

*Results not significant at the 5% level.

Table 37
RESIDENCE OF MALE AND FEMALE DROP-OUTS AND PERSISTERS

	Living with Parents		Living with Guardian	
	No.	Per Cent	No.	Per Cent
Male Drop-Outs	342	95	18	5
Male Persisters	381	98	8	2
Female Drop-Outs	302	94	19	6
Female Persisters	335	98	8	2
All Drop-Outs	644	95	37	5
All Persisters	716	98	16	2

Results of chi-square tests of independence and correlation coefficients:

	Boys	Girls	Total
x^2	4.834	5.468	10.305
ϕ	.08	.09	.09

(All of the results are significant at the 5% level.)

Table 38
HOME BACKGROUND OF MALE AND FEMALE DROP-OUTS AND PERSISTERS

	Broken Homes		Normal Homes	
	No.	Per Cent	No.	Per Cent
Male Drop-Outs	81	22	282	78
Male Persisters	48	12	341	88
Female Drop-Outs	71	22	247	78
Female Persisters	34	10	306	90
All Drop-Outs	152	22	529	78
All Persisters	82	11	647	89

Results of chi-square tests of independence and correlation coefficients:

	Boys	Girls	Total
x^2	13.164	18.618	31.182
ϕ	.13	.17	.15

(All of the results are significant at the 5% level.)

The data provided by the five per cent proportionate sample for all schools combined indicate that the fathers of 84 per cent of the male drop-outs and 53 per cent of the male persisters for whom these data were available had not graduated from high school. The fathers of 74 per cent of the female drop-outs and 49 per cent of the female persisters had not graduated from high school. It appears that fathers who did not graduate from high school were slightly more characteristic of male drop-outs that female drop-outs. The fathers of 14 per cent of the male drop-outs and 33 per cent of the male persisters graduated but did not go beyond high school. The fathers of 25 per cent of the female drop-outs and 37 per cent of the female persisters graduated but did not go beyond high school. It appears that this classification did not differentiate between female drop-outs and persisters as well as it did between male drop-outs and persisters. Only two per cent of the fathers of male drop-outs as compared to 14 per cent of the fathers of male persisters completed one or more years of post-high school work. Only one per cent of the fathers of female drop-outs as compared to 14 per cent of the fathers of female persisters completed one or more years of post-high school work. (See Table 39)

It would appear that there was a definite relationship between the educational level of the father and whether or not the child withdrew or persisted in high school. This is substantiated by the results of a chi-square test of independence which indicated that this relationship was significant beyond the five per cent level. The extent of this relationship is indicated by contingency coefficients of .32 for the boys and .28 for the girls.

The educational attainment of the mothers was generally higher than that of the fathers. The mothers of 73 per cent of the male drop-outs and 46 per cent of the male persisters had not graduated from high school. The mothers of 70 per cent of the female drop-outs and 39 per cent of the female persisters had not graduated. Twenty-three per cent of the mothers of male drop-outs and 41 per cent of the mothers of male persisters graduated but did not go beyond high school. Twenty-eight per cent of the mothers of female drop-outs and 46 per cent of the mothers of female persisters graduated but did not go beyond high school. The mothers of approximately three per cent of the drop-outs as compared with 14 per cent of the persisters had completed one or more years of post-high school work.

The results of the chi-square test of independence indicate that the relationship between the educational attainment of the mother and whether or not the pupil withdrew or persisted was statistically significant beyond the five per cent level. The extent of the relationship as indicated by contingency coefficients is approximately the same as that obtained in the analysis concerned with the fathers, except that this time the relationship appears to be slightly higher for the girls than for the boys. (See Table 40)

Table 39
EDUCATIONAL ATTAINMENT OF SUBJECTS' FATHERS
(Five per cent proportionate sample)

	Did not Graduate from High School		Graduated from High School*		One Year or More Beyond High School	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
Male Drop-Outs	226	84	38	14	5	2
Male Persisters	158	53	99	33	40	14
Female Drop-Outs	151	74	50	25	3	1
Female Persisters	118	49	91	37	34	14
All Drop-Outs	377	79	88	19	8	2
All Persisters	276	51	190	35	74	14

Results of chi-square tests of independence and correlation coefficients:

	Boys	Girls	Total
x^2	65.198	38.837	102.185
c	.32	.28	.30

(All of the results are significant at the 5% level.)
*but did not go beyond high school.

Table 40
EDUCATIONAL ATTAINMENT OF SUBJECTS' MOTHERS
(Five per cent proportionate sample)

	Did not Graduate from High School		Graduated from High School*		One Year or More Beyond High School	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
Male Drop-Outs	188	73	58	23	11	4
Male Persisters	131	46	116	41	37	13
Female Drop-Outs	138	70	55	28	4	2
Female Persisters	92	39	108	46	34	15
All Drop-Outs	326	72	113	25	15	3
All Persisters	223	43	224	43	71	14

Results of chi-square tests of independence and correlation coefficients:

	Boys	Girls	Total
x^2	42.359	47.288	88.520
c	.27	.31	.29

(All of the results are significant at the 5% level.)
*but did not go beyond high school.

When the educational attainment of both parents was combined, the relationship between the educational attainment of parents and persistence in school was slightly higher as indicated by coefficients of .32 and .34. Data presented in Table 41 indicate that for 67 per cent of the drop-outs neither parent had graduated from high school. This situation characterized 38 per cent of the persisters. In 85 per cent of the drop-out cases at least one parent had not graduated from high school as compared with 57 per cent of the persister cases. There were only 23 cases where one parent had not graduated from high school and the other had taken one or more years of post-high school work. This situation occurred for only one per cent of the drop-outs and only four per cent of the persisters. In 15 per cent of the drop-out cases both parents had at least graduated from high school as compared with 43 per cent of the persister cases for whom this situation occurred. In three per cent of the drop-out cases at least one parent had completed one or more years of post-high school work as compared with 19 per cent of the persisters for whom this situation occurred.

R The results of the investigation of the relationship between the education of the parents and withdrawal or persistence indicate that much larger percentages of drop-outs than persisters had parents who had not completed high school and, conversely, that higher percentages of persisters than drop-outs had parents who had graduated from high school. This supports the conclusion that the lower the educational attainment of the parents, the greater the tendency for an individual to withdraw from school prior to graduation.

Occupation of Father

Differences between drop-outs and persisters with respect to the occupational class of the father also were investigated. Occupations were classified into a seven point scale from one, indicating highest status, to seven, indicating lowest status. The scale used was an adaptation of the Warner Scale.[1] Differences between drop-outs and persisters for each school size for boys and for girls were tested for significance using a Type VI analysis of variance design as described in the section dealing with absenteeism. The difference between drop-outs and persisters for all school sizes combined and for both boys and girls together was statistically significant at the .001 per cent level, meaning that the difference was so large that it could appear less than one time in one hundred thousand by chance alone. The average (mean) occupational class of the fathers of drop-outs was 5.25. The average occupational class of the fathers of the persisters was 4.21, a difference of approximately one class level. (See Table 42)

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[1] Warner, W. L., Meeker, M., and Eells, K., *Social Class in America*, Science Research Associates, 1949, pp. 140-141.

Table 41

EDUCATIONAL ATTAINMENT OF SUBJECTS' PARENTS

	1		2		3		4		5		6		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Male Drop-Outs	184	70	41	16	27	10	4	1	5	2	3	1	264
Female Drop-Outs	125	63	39	20	31	15	0	0	2	1	2	1	199
Male Persisters	116	41	42	15	74	26	10	3	22	8	21	7	285
Female Persisters	83	36	34	15	71	30	9	4	22	9	15	6	234
Total Drop-Outs	309	67	80	17	58	13	4	1	7	1	5	1	463
Total Persisters	199	38	76	15	145	28	19	4	44	8	36	7	519

Code: 1 = Neither parent graduated from high school.
2 = One parent graduated from high school; one did not.
3 = Both parents graduated from high school.
4 = One parent took post-high school work; one did not graduate from high school.
5 = One parent took post-high school work; one parent graduated from high school but took no work beyond.
6 = Both parents took post-high school work.

Results of chi-square tests of independence and contingency coefficients: (All are significant beyond the 5% level.)

	Boys	Girls	Total
x^2	63.3616	57.662	118.463
c	.32	.34	.33

Table 17 indicates that the per cents of drop-outs in the occupational class levels indicating high status are much lower than the per cents of persisters in these occupational class levels, and that the per cents of drop-outs in the class levels indicating low status are much higher than the per cents of persisters in these occupational class levels. An example based on the figures in Table 42 illustrates this point:

> Out of 200 drop-outs, one will be in Class I and 46 will be in Class VII.
>
> Out of 600 persisters, 18 will be in Class I and 60 will be in Class VII.
>
> Since the ratio of persisters to drop-outs in the total population is three to one, these examples can be combined. Thus, out of 800 subjects, 200 of whom are drop-outs and 600 of whom are persisters, 19 will be in Class I, one drop-out and 18 persisters. The chances, therefore, of a subject from Class I being a drop-out are only about five in 100. Out of the 800 subjects, 106 will be in Class VII, 46 drop-outs and 60 persisters. The chances, therefore, of a subject from Class VII being a drop-out are 45 in 100. Thus, the chances that a person in Class VII will be a drop-out are nine times as great as for a person in Class I.

Table 43 indicates that the class levels identified as "3," "6," and "7" appear to provide the greatest differences between the per cents of drop-outs and per cents of persisters classified in any one class. The fathers of 11.5 per cent of the drop-outs were in level "3" as compared to 21 per cent of the fathers of the persisters. The fathers of 21 per cent of the drop-outs were in level "6" as compared to 10 per cent of the fathers of the persisters. The fathers of 23 per cent of the drop-outs were in level "7" as compared to 10 per cent of the fathers of the persisters. Levels "6" and "7" consist primarily of semi-skilled and unskilled occupations. Level "3" consists primarily of owners of small businesses, semi-professional, junior executive, and sales occupations.

R

The results indicate that the occupational class of the father is a significant factor in differentiating drop-outs from persisters and that its importance in differentiation is not affected by school size or sex of the subject. Therefore, this factor is, by itself, useful in predicting drop-outs.

Table 42
DIFFERENCES BETWEEN DROP-OUTS AND PERSISTERS WITH RESPECT TO OCCUPATIONAL CLASS OF FATHERS
(5 per cent proportionate sample)

	Drop-Outs		Persisters
Group I			
n	111		108
Mean Occupational Class	4.7928		4.0926
Difference Between Means		.7002	
Critical Ratio		3.754	
Group II			
n	95		107
Mean Occupational Class	5.1053		4.1308
Difference Between Means		.9745	
Critical Ratio		4.841	
Group III			
n	107		110
Mean Occupational Class	4.9439		4.1000
Difference Between Means		.8439	
Critical Ratio		4.073	
Group IV			
n	279		283
Mean Occupational Class	5.5806		4.3322
Difference Between Means		1.2484	
Critical Ratio		10.447	
Groups Combined			
n	592		608
Mean Occupational Class	5.2466		4.2122
Difference Between Means		1.0344	
Critical Ratio		12.3000	

(All Differences are significant beyond the 5% level.)

Table 43
DISTRIBUTION OF OCCUPATIONAL CLASS OF FATHERS OF SUBJECTS FROM ALL SCHOOLS

	Drop-Outs						Persisters					
Occup.	Male		Female		Total		Male		Female		Total	
Class	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	1	.4	1	.5	2	.5	8	2	9	3	17	3
2	5	2	5	2	10	2	31	10	32	11.5	63	10
3	47	15.3	21	7	68	11.5	73	22	57	20	130	21
4	47	15.3	39	14	86	15	71	22	67	24	138	23
5	83	27	78	27	161	27	80	25	63	22	143	23
6	60	20	67	23	127	21	35	11	23	8	58	10
7	62	20	76	26.5	138	23	27	8	32	11.5	59	10
Total	305	100	287	100	592	100	325	100	283	100	608	100
Mean	5.08		5.41		5.25		4.22		4.20		4.21	

Note: The occupational class "1" denotes occupations having the highest status.
The occupational class "7" denotes occupations having the lowest status.

Employment Status of Subjects' Mothers

This factor refers to whether or not the mothers of the subjects were employed regularly outside the home. The per cent of the mothers of subjects from the larger schools (Groups III and IV) who were employed outside the home was greater than the corresponding per cent for subjects from smaller schools (Groups I and II).

The differences between boys and girls were slight except for persisters from Group III schools. The mothers of 10 per cent of the male persisters from Group III schools were employed whereas 25 per cent of the mothers of female persisters from Group III schools were employed. Although a higher per cent of the mothers of drop-outs were employed than the corresponding per cent of the mothers of persisters for each size group separately, the differences between them appear to be too slight to be of any practical value. This conclusion is substantiated by the results of chi-square analyses which were used to investigate the relationship between whether or not the mother was employed and withdrawal or persistence. This relationship was not significant at the five per cent level for the subjects in any school size category except for male subjects from Group III schools and female subjects from Group IV schools. In the latter case, the extent of the relationship was very slight, yielding a phi coefficient of only .085.

For this sample, it can be said that the factor of whether or not the mother is employed is of little value in differentiating between drop-outs and persisters.

Age at Time of Withdrawal and Last Grade Completed

~~Table 44 indicates that~~ There was slight difference in the average age at time of withdrawal between the subjects when compared by school size category, that the female drop-outs were slightly younger on the average (not more than two months younger except in the Group I schools), that there was no appreciable difference between the subjects with respect to the last grade completed when compared by school size category, and that the female drop-outs tended to complete slightly more grades than the male drop-outs (again, not more than approximately two months difference). ~~From Table 45 it may be seen that~~ The greatest number withdrew during the tenth grade (31 per cent), but the incidence of withdrawal was nearly as great in the ninth and eleventh grades (30.5 per cent and 25.3 per cent respectively). Approximately thirty-three per cent of the withdrawals occurred at the age of sixteen with approximately twenty and twenty-two per cent occurring at the ages of fifteen and seventeen respectively.

R

It appears that there was a considerable amount of overageness for those who withdrew during the ninth grade, particularly for the boys. Overageness is defined as follows:

In 9th grade at age 15 years 6 months or older.
In 10th grade at age 16 years 6 months or older.
In 11th grade at age 17 years 6 months or older.
In 12th grade at age 18 years 6 months or older.

This definition was arrived at by establishing the age-range at which pupils may enter kindergarten and projecting this age-range through high school assuming normal progression. Thus, at the end of the ninth grade, the normal age-range is from 14 years 6 months to 15 years 6 months. This, admittedly, is based on logic, but it is substantiated by a cursory survey of the age-grade distribution included in the North Central Association Evaluation Reports of several Iowa high schools. For the proportionate sample, approximately 73 per cent of the male drop-outs who withdrew during the ninth grade were overage, whereas approximately 56 per cent of the female drop-outs who withdrew during the ninth grade were overage. Approximately 47 per cent of the boys (whose ages were

Table 44

AVERAGE AGE OF DROP-OUTS AT TIME OF WITHDRAWAL AND AVERAGE GRADE LAST COMPLETED

(Summary table of means)

Age in terms of years and months:

School Group	Boys	Girls	Combined
Group I	16 - 7	16 - 1	16 - 4
Group II	16 - 8	16 - 7	16 - 7
Group III	16 - 8	16 - 7	16 - 7
Group IV	16 - 10	16 - 7	16 - 8
All Groups	16 - 9	16 - 6	16 - 7

Grade in terms of years and months:

School Group	Boys	Girls	Combined
Group I	10 - 5	11 - 0	10 - 7
Group II	10 - 7	10 - 9	10 - 7
Group III	10 - 6	11 - 1	10 - 8
Group IV	10 - 8	10 - 7	10 - 7
All Groups	10 - 7	10 - 9	10 - 8

(Note: The highest possible month of any grade is 9.)

Table 45
PER CENT OF DROP-OUTS WITHDRAWING IN EACH GRADE

Grade	Total*	Boys*	Girls*	Group I Total	Group II Total	Group III Total	Group IV Total	Group I Boys	Group II Boys	Group III Boys	Group IV Boys	Group I Girls	Group II Girls	Group III Girls	Group IV Girls
9	32.3%	35.3%	27.0%	33.5%	31.7%	32.6%	28.4%	40.6%	35.4%	40.5%	26.9%	24.7%	26.4%	24.2%	29.6%
10	32.0%	33.7%	29.0%	31.2%	34.1%	23.9%	31.0%	32.2%	34.3%	23.7%	33.5%	29.9%	33.8%	24.2%	28.9%
11	26.3%	21.4%	30.9%	27.4%	23.2%	29.8%	27.0%	18.6%	18.7%	22.1%	24.3%	39.0%	29.4%	37.9%	29.3%
12	8.5%	9.8%	6.9%	5.6%	8.6%	11.4%	10.5%	5.7%	10.4%	11.4%	12.0%	5.2%	5.9%	11.3%	9.1%

*The three columns indicated with an asterisk are based on the five per cent proportionate sample. The other columns, since they are not concerned with the groups combined, are based on more than the five per cent proportionate sample.

known) who withdrew during the tenth grade were overage as compared to 40 per cent of the girls. Approximately 39 per cent of the boys as compared to 21 per cent of the girls who withdrew during the eleventh grade were average. Approximately 38 per cent of the boys as compared to 30 per cent of the girls who withdrew during the twelfth grade were overage. (See Table 46)

The extent of overageness for particular grades varies somewhat from group to group.

Differences with respect to the grade during which the withdrawals occurred were also found between the sexes and among the size groups. Generally, the girls withdrew from a higher grade than did the boys. This was particularly true in Groups I and III. Table 45 indicates that the greatest number of boys withdrew during the ninth grade (33.3 per cent) while 32.7 per cent withdrew during the tenth grade and 20.4 per cent withdrew during the eleventh grade. In Table 45 it is shown that the greatest number of girls withdrew during the eleventh grade (30.9 per cent) while 29 per cent withdrew from the tenth grade and 27 per cent withdrew from the ninth grade.

Factors Which Best Differentiate Drop-Outs From Persisters

In order to make these findings more useful, the factors that appeared to best differentiate between drop-outs and persisters were combined with certain academic and intellectual factors presented in Section II in order to find the best combination of factors characteristic of drop-outs. Multiple biserial correlation analyses were performed. The following factors were included in these analyses and in the formulation of regression equations: per cent of time absent, number of extra-curricular activity areas participated in, occupational class of father, educational attainment of parents, intelligence quotient, composite score on the Iowa Tests of Educational Development for the ninth grade, elementary grades, and high school grade point average. Separate analyses were carried out for boys and girls.

For the boys in this sample, the correlation between the scores obtained on these eight factors and withdrawal was .63. To make the identifying equation more efficient, that is, to obtain nearly as good a differentiation between drop-outs and persisters with the fewest possible factors, only the five factors listed below needed to be used: intelligence quotient, composite score on the ITED, high school grade point average, number of extra-curricular activity areas participated in, and educational attainment of parents. For boys in this sample, the correlation between the scores obtained on these factors and withdrawal was .625. Thus, there was very little loss in the power of differentiation due to the exclusion of the other three factors. This does not mean that these three factors were not important. It is very possible that they were deleted because their contribution to the differentiation was included, in a sense duplicated, by one or more of the factors retained in the equation. When this formula was applied to subjects held out of the original analysis, 84 per cent of the drop-outs were identified correctly and 80 per cent of the persisters were identified correctly.

Table 46
PER CENT OF OVERAGENESS OF DROP-OUTS BY SEX AND SCHOOL SIZE GROUP

Grade of Withdrawal	Total*	Boys*	Girls*	Group I Total	Group II Total	Group III Total	Group IV Total	Group I Boys	Group II Boys	Group III Boys	Group IV Boys	Group I Girls	Group II Girls	Group III Girls	Group IV Girls
9	66%	73%	56%	70%	51%	55%	68%	77%	53%	62%	78%	56%	47%	41%	60%
10	44%	47%	40%	41%	55%	42%	43%	52%	58%	37%	52%	25%	50%	47%	33%
11	29%	39%	21%	28%	32%	26%	38%	44%	44%	31%	36%	16%	21%	23%	39%
12	34%	38%	30%	56%	43%	24%	25%	50%	50%	33%	32%	67%	25%	14%	17%

* The three columns indicated with an asterisk are based on the five per cent proportionate sample of students. The other columns, since they are not concerned with the group combined, are based on more than the five per cent proportionate sample.

Overageness is defined as follows:
9th grade --15 years 6 months or older.
10th grade --16 years 6 months or older.
11th grade -- 17 years 6 months or older.
12 th grade -- 18 years 6 months or older.

For girls in this sample, the correlation between the scores obtained on the eight factors and withdrawal was .665, approximately the same as that obtained for the boys. To make the identifying equation more efficient, that is, to obtain nearly as good a differentiation between drop-outs and persisters with the fewest possible factors, only the three factors listed below needed to be used: high school grade point average, per cent of time absent, and number of extra-curricular activity areas participated in. For girls in this sample, the correlation between the scores obtained on these three factors and withdrawal was .653. Again, there was very little loss in the power of differentiation due to the exclusion of factors. As was mentioned for the boys, the deletion of these variables or factors does not indicate that they are of no importance in differentiating drop-outs from persisters. It is very possible that they were deleted because their contribution to the prediction was included or duplicated by one or more of the factors retained in the equation. When the three variable formula was applied to the female subjects held out of the original analysis, 81 per cent of the drop-outs were identified correctly and 79 per cent of the persisters were identified correctly.

This analysis was used to find how well a combination of factors differentiated between drop-outs and persisters. The prediction equations are general and include data which continue beyond the ninth grade for the subjects involved. Therefore, these equations should not be used as they stand for a particular school. The results of this analysis, however, indicate that such formulae would be useful in predicting those students who appear to have the least chance of persisting in school. The formulae specifically used to predict such students should be used sometime in the ninth grade for most effective use. Furthermore, they should be developed for a particular school for the most accurate prediction. It would be necessary that the information used in the formulae include only that available for ninth grade students. Since this study was concerned primarily with which factors differentiated between drop-outs and persisters and not with which factors present only among the ninth grade students that differentiated between drop-outs and persisters, the data concerning participation in extra-curricular activities and absenteeism involve the whole time that each pupil was in school. It is further recommended that specific prediction formulae be obtained for an individual school because each school will then be conscious of the need for accurate and precise records that will provide the data necessary for the ninth grade separately. In many schools visited in this study, it would have been impossible to secure extra-curricular and absence data for the ninth grades alone. If the formulae obtained in this study were used without modification, the error in prediction would be greater for the persisters than for the drop-outs; this is to say that a greater per cent of students who would persist would be classified wrongly as potential drop-outs than the per cent of students who would withdraw would be wrongly classified as potential graduates.

The results of these analyses indicate that drop-outs and persisters can be better differentiated when a combination of factors is employed. Because of the limited sample involved in the correlation analysis, conclusions must be tentative. However, since the formulae were nearly as effective with the cross-validation group as with the original sample, some weight can be given to the conclusion that the combinations of the five factors for the boys and the three factors for the girls obtained in this study are the most efficient combinations of factors in differentiating drop-outs from persisters. Therefore, if other measures are too difficult or too expensive to obtain, the factors included in the most efficient combinations could do nearly as good a job as all factors together.

SECTION IV

THE RELATIONSHIPS OF CERTAIN SCHOOL FACTORS TO HOLDING POWER*

It was the purpose of this section of the study to observe various phases of the educational program in a sample of Iowa high schools and to show the relationships between these and the holding power for these schools. The phases of the educational program studied were the program of studies, the guidance program, extra-curricular activities, teacher morale, student morale, and the physical plant. Results are reported by school size groups. Since the means and standard deviations of the ratings and holding power ratios are central to the statistical treatment, these are reported. However, these statistics have a further value in that they provide the basis upon which generalizations of group characteristics are based. Moreover, these measures of central tendency and variation give the best means of comparing individual schools within the groups--both to the generalizations for the group and to some other school.

The hypotheses tested in this phase of the study were statements of no difference in obtained ratings in each of the factors observed when schools high in holding power were compared to those low in holding power. Since the samples were relatively small, the "t" statistic was employed and the region of rejection selected considered both tails of the distribution. The five per cent level of confidence was selected because it was considered that action suggested if the hypothesis were to be rejected would not call for efforts unwarranted in the schools for other important objectives of the school.

In dividing the schools into high and low holding groups, those schools which had holding power ratios in the upper one-third and the lower one-third were selected. The statistical justification for this is that it is near the twenty-seven per cent usually recommended as statistically correct in defining extremes; in this study one-third extremes fitted the samples of schools in each size group.

In addition to testing certain hypothesis by use of the "t" statistic, correlation indices were computed. In the correlation calculations data from all schools were used, rather than relying upon the one-third extremes. In general, a relationship demonstrated by one means, should also be demonstrated by the other, or failing that, the characteristics of the middle third school should be considered. Data are presented and analyses made for each size groups independently to avoid a bias which would be introduced by combining all four size groups due to the greater enrollments and resources of the large schools. The purpose of this phase of the study was to determine if holding power was related to phases of the educational program and not whether these aspects of the educational program were related to school size.

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* For the complete report on this phase of the study see James E. Hayes, "The Relationship of Certain School Factors To The Holding Power of Selected Iowa Secondary Schools," unpublished Ph.D. dissertation, the State University of Iowa, 1958.

Group I Schools (10 to 99 students).

The means and standard deviations for the holding power ratios and scores for the observation of factors in Group I schools are presented in Table 47. This table also shows the midpoint of the rating scale of school factors. From inspection of the Guide To The Observation of school factors (See Hayes)[1] it will be noted that the scale midpoint was selected to represent a rating of "good." No such standard was set for the teacher morale and student morale factors, but the midpoints of the scales are likewise presented in Table 47.

As Table 47 shows, where a standard was set for the observation of factors, obtained means fall below the "good" rating. The mean rating for extra-curricular activities programs most nearly approaches the standard, being less than one full unit below it. Fourteen of the thirty-two schools received a rating on this program at or above the "good" rating.

The mean for guidance program ratings is more than ten units below the "good" rating. No school in Group I received a rating at or above the "good" rating. Items three and six in the guide to the observation of the guidance program called for conditions not often found in schools of this size, namely for a trained counselor and for space devoted to guidance and counseling functions. However, credit was given on these items for trained counselors who spent some of their time in guidance functions as well as for space, whatever its major function, utilized to house guidance materials and functions.

While the mean for program of studies scores is below the "good" standard, two schools were scored at the standard of fifteen points. Five schools received a rating of "good" or above for the physical plant factor. This rating is, in part, related to the program of studies factor in that Item 2 called for space and equipment necessary to a complete and rounded program.

Teacher morale and student morale means are less than one full unit above the midpoint on the scale. While conditions varied a good deal from school to school in the administration of the morale questionnaires, it was felt that in general good morale was observed, particularly student morale.

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[1] Ibid, Appendix A

Table 47

MEANS AND STANDARD DEVIATIONS OF HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS FOR GROUP I SCHOOLS (10 TO 99 STUDENTS); SAMPLE IS 5.7% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=32

Variable	Scale Midpoint	Mean Scores	Standard Deviation
Holding Power Total		.866	.084
Holding Power Boys		.859	.097
Holding Power Girls		.876	.091
Total Rating		51.340	6.980
Program of Studies	15	9.094	2.843
Guidance Program	18	7.844	2.500
Extra-Curricular	15	14.344	2.512
Teacher Morale	6	6.125	1.691
Student Morale	9	9.562	1.437
Physical Plant	6	4.375	1.340

Analysis for each school factor consisted of testing the null hypothesis that school with high holding power would not exceed schools with low holding power in the mean for each factor evaluated. These hypotheses were tested for holding power total, for holding power for boys and for holding power for girls. High and low were defined as the one-third extremes. The "t" test of difference between means was employed with the five per cent coefficient of risk. Table 48 gives the results of these tests for holding power total.

In Group I schools, the mean score for all phases of the education program for schools low in holding power was higher than the mean score for schools high in holding power for four of the six observations. The same occurred for the total score of the factors. No differences between means was significant at the five per cent level of confidence. Results showing differences by sexes are reported in the complete study by Hayes.[1] The difference for boys and girls were not statistically significant at the five per cent level.

Zero-order correlation coefficients were calculated for each of the school factor scores, the total of these, and the holding power ratios. Table 49 gives the results of these calculations. There are no significant correlations between any holding power ratio and any score on school factors when the five per cent coefficient of risk is employed. A positive association is indicated for the guidance program and the extra-cur-

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[1] Ibid, pp. 64-65.

Table 48
"t" VALUES FOR DIFFERENCES BETWEEN MEANS OF SCHOOLS HIGH IN HOLDING POWER AND SCHOOLS LOW IN HOLDING POWER FOR EACH OF VARIOUS FACTORS AND FOR TOTAL OF FACTORS IN GROUP I SCHOOLS (10 TO 99 STUDENTS); SAMPLE IS 5.7% OF SCHOOLS OF THIS SIZE 1950-53; N=32*

Factor	M-Schools High	M-Schools Low	M-M** H L	t	df	t 05
Total Rating	48.7	49.6	-1.9	.25	18	2.10
Program of Studies	7.6	8.6	-1	.87	18	2.10
Guidance Program	7.3	7.4	- .1	.53	18	2.10
Extra-Curricular	14.1	13.6	.5	.45	18	2.10
Teacher Morale	6.	6.2	- .2	.24	18	2.10
Student Morale	9.7	9.5	.2	.27	18	2.10
Physical Plant	4	4.3	- .3	.45	18	2.10

*High and low are defined as the one-third extremes.

**None of the differences are significant at the five per cent level.

Table 49
ZERO-ORDER CORRELATIONS AMONG HOLDING POWER RATIOS AND MEASURES OF SCHOOLS FACTORS IN GROUP I SCHOOLS (10 TO 99 STUDENTS); SAMPLE IS 5.7% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=32

Variables	Holding Power Total	Holding Power Boys	Holding Power Girls
1. Holding Power Total		.68*	.78*
2. Holding Power Boys	.68*		.31
3. Holding Power Girls	.78*	.31	
4. Total Rating	-.09	.04	-.10
5. Program of Studies	-.09	-.08	-.11
6. Guidance Program	.04	.18	.05
7. Extra-Curricular	.17	.23	.09
8. Teacher Morale	-.13	.04	-.21
9. Student Morale	.09	.07	-.02
10. Physical Plant	-.04	-.10	.07

*Significant at 5% level of confidence

ricular activities program when compared to the total holding power ratio as well as to that for boys and for girls. A consistently negative association was found for program of studies when compared to the total holding power ratio as well as that for boys and for girls.

The relationship of drop-out of boys to that of girls is not strongly indicated in Group I schools as is indicated by a coefficient of .31.

Group II Schools (100 to 249 students).

The means and standard deviations for the holding power ratios and scores for the observation of factors in Group II schools are presented in Table 50. This table also shows the midpoint of the rating scale of school factors.

The holding power for boys in this size group falls below that for girls, with the total for both sexes expressed in percentages being 88.6 per cent.

As Table 50 shows, where a standard was set for the observation of factors, obtained means fall below a "good" rating. The mean rating for extra-curricular activities most nearly approaches the standard, being less than one full unit below it. Nine of the seventeen schools received a rating on this program at or above the "good" rating.

The mean for guidance program ratings is more than eight units below the "good" rating. One school in Group II received a rating equal to the "good" rating. The ratings for guidance showed greater variance in this group than did any other factor.

Three schools were rated at or above the "good" rating in program of studies. While the mean in this group for program of studies is below the "good" rating, considerable variability was noted in this rating. In general, schools in this group failed to score high on item five and to a lesser extent on item four of the Guide To The Observation. These items refer to provisions for library and materials and to provisions for individual differences. However, schools receiving high rating in program of studies, relative to the group, also scored high on these two items.

Teacher morale and student morale means are more than one full unit above the midpoint on the scale. The standard deviation for both morale scores shows relatively little variation.

Analysis for each school factor consisted of testing the null hypothesis that schools with high holding power would not exceed schools with low holding power in the means for each factor. These hypotheses were tested for holding power for boys and for holding power for girls. High and low are defined as the one-third extremes. The "t" test of differences between means was employed with the five per cent coefficient of risk. Table 51 gives the results of these tests for holding power total.

Table 50

MEANS AND STANDARD DEVIATIONS OF HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS FOR GROUP II SCHOOLS (100 TO 249 STUDENTS); SAMPLE IS 9% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=17

	Scale	Mean	Standard
Variable	Midpoint	Scores	Deviation
Holding Power Total		.866	.061
Holding Power Boys		.855	.089
Holding Power Girls		.903	.059
Total Rating		58.823	7.066
Program of Studies	15	12.471	3.049
Guidance Program	18	9.647	3.377
Extra-Curricular	15	14.118	2.217
Teacher Morale	6	6.763	1.224
Student Morale	9	10.294	1.073
Physical Plant	6	5.529	1.540

Table 51

"t" VALUES FOR DIFFERENCES BETWEEN MEANS OF SCHOOLS HIGH IN HOLDING POWER AND SCHOOLS LOW IN HOLDING POWER FOR EACH OF VARIOUS FACTORS AND FOR TOTAL OF FACTORS IN GROUP II SCHOOLS (100 TO 249 STUDENTS); SAMPLE IS 9% OF SCHOOLS OF THIS SIZE 1950-53; N=17*

	M-Schools	M-Schools	M-M**			t
Factor	High	Low	H L	t	df	05
Total Rating	59.8	53.6	6.2	1.24	8	2.31
Program of Studies	11.4	12.2	- .8	.42	8	2.31
Guidance Program	11	7.8	3.2	.97	8	2.31
Extra-Curricular	15	12.6	2.4	1.71	8	2.31
Teacher Morale	6.8	6.2	.6	.79	8	2.31
Student Morale	10.8	9.8	1	1.62	8	2.31
Physical Plant	4.8	5	- .2	.34	8	2.31

*High and Low are defined as the one-third extremes

**None of the differences are significant at the five per cent level.

In Group II schools the group low in holding power obtained higher means for program of studies and physical plant than did the high power schools. These higher values for the low holding schools were very small. In the other factors and in total, the high holding power schools means were above the low holding schools. However, in no case were the differences significant at the five per cent level of confidence.

Zero-order correlation coefficients were calculated for each of the school factors scores, the total of these, and the holding power ratios as shown in Table 52. Coefficients significant at the five per cent level were obtained between several factors and holding power total, holding power for boys, and holding power for girls. While all factors are positively associated with holding power total, they are significant for total rating, extra-curricular activities, and teacher morale. Only teacher morale is also significant for holding power for boys. Small negative relationship is suggested for program of studies, extra-curricular activities, guidance, and plant when compared to holding power for boys.

As was the case with the "t" tests for differences between means, holding power for girls appears positively related to each of the factors. This relationship is significant for the total rating, guidance, and extra-curricular activities.

The association of rate of drop-out of boys to that of girls is indicated by the coefficient of .57.

Group III Schools (250 to 499 students).

The means and standard deviations for the holding power ratios and scores for the observation of factors in Group III schools are presented in Table 53. This table also shows the midpoint of the rating scale of school factors.

The holding power for boys in this size group falls below that for girls, with the total for both sexes expressed in percentages being 82.6 per cent. While holding power for girls exceeds that for boys, there would appear to be greater variance for girls than for boys.

As Table 53 shows, where a standard was set for the observation of factors, obtained means were, except in the case of guidance, above the standard. The mean rating for guidance was more than six units below the "good" standard, but as the standard deviation suggests, considerable variance existed in Group III schools in this factor. Two schools of the fifteen scored aboved the standard, while one was scored at the lowest point in the scale.

The mean for program ratings was more than two points above the "good" standard. Only two schools in the group scored below the good standard.

The mean for extra-curricular ratings was more than two points above the "good" rating. Only one school failed to receive a rating of "good" or above.

Table 52
ZERO-ORDER CORRELATIONS AMONG HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS IN GROUP II SCHOOLS (100 TO 249 STUDENTS); SAMPLE IS 9% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=17

Variable	Holding Power Total	Holding Power Boys	Holding Power Girls
1. Holding Power Total		.79*	.89*
2. Holding Power Boys	.79*		.57*
3. Holding Power Girls	.89*	.57*	
4. Total Rating	.49*	.18	.58*
5. Program of Studies	.16	-.16	.26
6. Guidance Program	.37	-.22	.47*
7. Extra-Curricular	.58*	-.05	.65*
8. Teacher Morale	.47*	.38	.33
9. Student Morale	.07	.20	.16
10. Physical Plant	.10	-.06	.24

*Significant at 5% level of confidence

Table 53
MEANS AND STANDARD DEVIATIONS OF HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS FOR GROUP III SCHOOLS (250 TO 499 STUDENTS); SAMPLE IS 25% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=15

Variable	Scale Midpoint	Mean Scores	Standard Deviation
Holding Power Total		.826	.041
Holding Power Boys		.817	.024
Holding Power Girls		.835	.072
Total Rating		69.533	9.013
Program of Studies	15	17.800	2.197
Guidance Program	18	11.933	5.190
Extra-Curricular	15	17.200	1.939
Teacher Morale	6	6.600	1.782
Student Morale	9	9.667	1.008
Physical Plant	6	6.267	2.143

Three schools in the group failed to receive a rating of "good" or above on teacher morale, but the mean for the group exceeds the "good" standard.

Analysis for each school factor consisted of testing the null hypothesis that schools with high holding power would not exceed schools with low holding power in the means for each factor. These hypotheses were tested for holding power total, for holding power for boys and for holding power for girls. High and low are defined as the one-third extremes. The "t" test of differences between means was employed with the five per cent coefficient of risk. Table 54 gives the results of these tests for holding power total.

In Group III schools the obtained means for both high and low holding groups exceed the "good" standard except in the case of physical plant in low holding power schools. Of particular note is the fact that for the entire group, the mean rating for guidance was well below the good standard, but is above it in both the high and low holding schools. It is also in this factor alone that the low holding schools exceed the mean of the high holding schools.

No difference between means was significant at the five per cent level of confidence, and "t" values tended to be very small.

Table 55 gives the zero-order correlation coefficients for each of the school factors. There are no significant correlations between any holding power ratio and any score on school factors employing the five per cent coefficient of risk. Positive associations were observed between extra-curricular activities, teacher morale and physical plant when compared to each of the three holding power ratios.

Group IV Schools (500 and over students).

The means and standard deviations for the holding power ratios and scores for the observation of factors in Group IV schools are presented in Table 56. This table also shows the midpoint of the rating scale of school factors.

The holding power for girls in this size group falls below that for boys, with the total for both sexes expressed in percentages being 76.2 per cent.

As Table 56 shows, where a standard was set for the observation of factors, obtained means were above the standard of "good" in all cases except that of the guidance program factor. While the mean for the group was less than one full unit below the "good" rating, only three schools scored at or above the standard. One school scored at the top-most point in the guidance scale. This was the only instance in any group where a school obtained a rating at the top in the guidance scale.

Table 54

"t" VALUES FOR DIFFERENCES BETWEEN MEANS OF SCHOOLS HIGH IN HOLDING POWER AND SCHOOLS LOW IN HOLDING POWER FOR EACH OF VARIOUS FACTORS AND FOR TOTAL OF FACTORS IN GROUP III SCHOOLS (250 TO 499 STUDENTS); SAMPLE IS 25% OF SCHOOLS OF THIS SIZE 1950-53; N=15*

Factor	M-High Schools	M-Low Schools	M-M** H L	t	df	t 05
Total Rating	71.8	68	3.8	.47	8	2.31
Program of Studies	18	17	1	.58	8	2.31
Guidance Program	20	22.3	-2.33	.57	8	2.31
Extra-Curricular	17.4	16.4	1	.80	8	2.31
Teacher Morale	6.4	5.4	1	.23	8	2.31
Student Morale	10	9.8	.2	.29	8	2.31
Physical Plant	8	5.2	2.8	1.35	8	2.31

*High and low are defined as the one-third extremes

**None of the differences are significant at the five per cent level.

Table 55

ZERO-ORDER CORRELATIONS AMONG HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS IN GROUP III SCHOOLS (250 TO 499 STUDENTS); SAMPLE IS 25% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=15

Variable	Holding Power Total	Holding Power Boys	Holding Power Girls
1. Holding Power Total		.86*	.96*
2. Holding Power Boys	.86*		.93*
3. Holding Power Girls	.96*	.93*	
4. Total Rating	.11	-.27	.23
5. Program of Studies	-.01	-.32	.14
6. Guidance Program	.00	-.14	.05
7. Extra-Curricular	.31	.27	.33
8. Teacher Morale	-.14	.28	.06
9. Student Morale	-.03	-.47	.22
10. Physical Plant	.45	.46	.37

*Significant at 5% level of confidence.

Table 56

MEANS AND STANDARD DEVIATIONS OF HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS FOR GROUP IV SCHOOLS (500 AND OVER STUDENTS); SAMPLE IS 26% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=9

Variable	Scale Midpoint	Mean Scores	Standard Deviation
Holding Power Total		.762	.061
Holding Power Boys		.766	.073
Holding Power Girls		.757	.070
Total Rating		84.222	11.872
Program of Studies	15	21.444	2.547
Guidance Program	18	17.222	5.827
Extra-Curricular	15	20.667	2.491
Teacher Morale	6	6.888	1.524
Student Morale	9	9.667	.939
Physical Plant	6	8.333	1.156

No school in Group IV scored less than the "good" rating in physical plant. Two schools in this group scored at the top of the physical plant scale. Ratings at the top of the plant scale occurred once each in two other groups. No other top point of the scale was reached in any group for factors other than guidance and plant.

Only one school scored at the "good" standard in program of studies. All others in Groups IV schools scored above it. The obtained mean for the group is more than six points above the rating of "good."

Only one school scored at the "good" standard in extra-curricular activities program. All others in Group IV schools scored above it. The obtained mean for the group is more than five points above the standard.

Teacher morale and student morale means are above the midpoint on both scales. The teacher morale mean is above the midpoint of the scale very much as in other groups, but in Group IV schools, the standard deviation suggests somewhat greater variability than in other groups.

Analysis for each school factor consisted of testing the null hypothesis that schools with high holding power would not exceed schools with low holding power in the means for each factor. These hypotheses were tested for holding power total, for holding power for boys and for holding power for girls. High and low are defined as the one-third extremes. The "t" test of differences between means was employed with the five per cent coefficient of risk. Table 57 gives the results of these tests for holding power total.

Table 57
"t" VALUES FOR DIFFERENCES BETWEEN MEANS OF SCHOOLS HIGH IN HOLDING POWER AND SCHOOLS LOW IN HOLDING POWER FOR EACH OF VARIOUS FACTORS AND FOR TOTAL OF FACTORS IN GROUP IV SCHOOLS (500 AND OVER STUDENTS); SAMPLE IS 26% OF SCHOOLS OF THIS SIZE 1950-53; N=9*

Factor	M-Schools High	M-School Low	M-M H L	t	df	t 05
Total Rating	84	78.6	5.4	.46	4	2.78
Program of Studies	22	20	2	.74	4	2.78
Guidance Program	15.3	17	-1.6	.22	4	2.78
Extra-Curricular	21.3	15.3	6	1.80	4	2.78
Teacher Morale	7	5.7	1.3	.44	4	2.78
Student Morale	9.6	9.6	0	0	4	2.78
Physical Plant	8.6	7.6	1	1.06	4	2.78

*High and low are defined as the one-third extremes

In Group IV schools the mean score of the group of schools high in holding power exceeds the mean for low holding schools in each factor except the guidance factor. In the guidance factor means for high and low holding groups are both below the mean for the entire group as reported in Table 57, but the difference is in favor of low holding schools. No difference between means was significant at the five per cent level; the difference for extra-curricular activities most nearly approaches this.

Zero-order correlation coefficients were calculated for each of the school factor scores, the total of these, and the holding power ratios. Table 58 gives the results of these calculations. Coefficients significant at the five per cent level of confidence were obtained between holding power total and extra-curricular activities. Other factors show a rather consistently positive association with the holding power ratios except for the guidance program and student morale factors.

The association of drop-out of boys to that of girls is quite strongly indicated in Group IV schools as is reflected in the coefficient of .87.

Summary

The data and the analysis of this study suggest no clear relationship of holding power to goodness of school factors except, probably that the extra-curricular activities program is related to holding power. Although several significant results were obtained with other factors, the supporting data suggest the operation of chance. Chance too may explain the finding for relationship for extra-curricular activities and holding power, but data in this study and findings elsewhere are such that a conclusion of relationship, if not demonstrated, is strongly suggested.

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Table 58

ZERO-ORDER CORRELATIONS AMONG HOLDING POWER RATIOS AND MEASURES OF SCHOOL FACTORS IN GROUP IV SCHOOLS (500 AND OVER STUDENTS); SAMPLE 26% OF IOWA SCHOOLS OF THIS SIZE 1950-53; N=9

Variable	Holding Power Total	Holding Power Boys	Holding Power Girls
1. Holding Power Total		.97*	.96*
2. Holding Power Boys	.97*		.87*
3. Holding Power Girls	.96*	.87*	
4. Total Rating	.20	.25	.23
5. Program of Studies	.51	.53	.50
6. Guidance Program	-.22	-.17	-.15
7. Extra-Curricular	.62*	.51	.52
8. Teacher Morale	.28	.24	.30
9. Student Morale	-.10	-.11	.14
10. Physical Plant	.42	.46	.40

*Significant at 5% level of confidence

This section of the study was simply one of relationships of phases of the educational program to drop-out rates and not a study of cause and effect. It is entirely possible that changes in certain provisions in a school's educational program would affect its holding power and it is also possible that schools in this study with high ratings on their educational program and also a high drop-out rate would have had an even higher drop-out rate if their school program had not been good, due to socio-economic influences in the community.

Rates of holding power confirm other studies made for Iowa and suggest that the state is somewhat higher in this regard than is typical for the nation. At the same time, observations excerpted from a Guide To The Observation of schools employed by various accrediting agencies found most schools of the smaller size groups below the adequate standard. It would appear that a school may not be judged by its holding ability -- if indeed the school is the institution or force operating to influence holding power. While no data were collected in this regard, the findings here suggest that community forces should be considered in further studies of holding power.

The findings here support the hypothesis that improvement of school programs and services would also improve to some extent the school's holding power since findings are generally positive, if not significant. Such improvement is otherwise laudable and would not be judged solely for its effect on the potential drop-out. Thus rather meager findings may be acted upon since the treatment indicated is known to bear on other objectives. If some optimum level of holding power is desired, the sugges-

tions made here may not be so readily acted upon, for it would appear that factors not considered in this section of the study, perhaps not directly within the control of the school, operate to influence holding power.

SECTION V

THE PROCESS OF DROPPING OUT OF SCHOOL*

O

In this section of the study the process of dropping out of high school was investigated, primarily from the perspective of the individual drop-out. This was done by attempting to answer the following two questions:

1. Can a process of dropping out of high school for drop-outs as individuals be identified in terms of the available information?
2. If individual drop-out processes can be identified, can several process types be identified?

Methods and Procedures

M

Sample. Case studies were completed for 46 boys and 34 girls, all of whom had dropped out of Iowa secondary schools between 1950 and 1956, inclusive. The 80 drop-outs came from a total of 38 schools. Fifteen subjects attended schools enrolling between 10 and 99 students, 15 from schools enrolling from 100 to 249 students, 15 from schools enrolling from 250 to 499 students, and 35 from schools with enrollments of 500 and above. Subjects were selected in terms of the adequacy of personal and family data available in their school records and their availability for interviews. The 80 subjects selected were part of a random sample of over 1,000 drop-outs from 73 Iowa public high schools.

Nature of the Data Collected. Each of the 80 case studies consists of certain objective information and a report of an interview with the subject. Three kinds of objective data were collected for each subject: 1) personal information, 2) family information, and 3) school information. Variables were included which, in general, had demonstrated in other studies the ability to discriminate between drop-outs and persisters.

The second part of each case study, an interview report, includes descriptions of the subject's perception of the drop-out situation, circumstances leading up to it, his feelings about preventing the withdrawal, and other related information.

Data Collection Procedures. The personal, family and school data for each drop-out were obtained from school cumulative records, registration cards, and enrollment ledgers. Permission to use these data sources for the respective schools was obtained prior to visiting the institutions. When an interview was arranged with a drop-out, after obtaining the objective data, the following general procedure was followed.

First, a brief explanation of the study was made to the subject, and permission was secured for an interview. The drop-out was then asked the following questions:

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*See John W. Loughary, "A Study of the Process of Dropping Out of School: Some Case Studies," Unpublished Ph. D. Dissertation, State University of Iowa, 1958.

1. What happened when you withdrew from school?
2. Was there a particular incident that happened about the time that you withdrew?
3. When did you first begin to think about quitting school?
4. How did the following people feel about your decision to quit school; friends, family, teachers, principal, counselor, others?
5. Did these people give you any help?
6. Did you ever return to school again?
7. How did you feel about the following when you were in school; teachers, students, classes, activities?
8. What did you do for recreation and entertainment when you were in school?
9. How do you spend you leisure time now?
10. How do you like your current job?
11. All things considered, why do you think that you withdrew from school?
12. What would have held you in school?

While the interviewing techniques of the four research workers contributing the interviews varied, all workers covered the same topics in each interview. The interviewers were instructed to be as permissive and accepting of the subjects as possible within the limits imposed by the necessity of securing information from each subject.

Methods Used in Analyzing Case Studies. The first question under consideration was:

Can a process of dropping out of high school for drop-outs as individuals be identified in terms of the available information?

This question was approached by attempting to develop a descriptive statement of the process involved in each case study. The following procedure was used with each case study.

1. An attempt was made to identify the predisposing factors in the case.
2. An attempt was made to identify the precipitating factors in the case.
3. An attempt was made to identify the positive factors in the case which operated to counteract the predisposing and precipitating factors.
4. A descriptive statement of the drop out process was prepared in terms of predisposing, precipitating, and counteracting factors, and the subject's statement of what would have held him in school.

Finally, the number of case studies for which a process had been identified was tabulated. The second question under consideration was:

If individual drop out processes can be identified, can several process types be identified?

This question was approached in the following manner.

1. The process descriptions were sorted according to the predominant predisposing factor in each case.
2. The case studies were then sorted according to the resulting categories.
3. The results of the two sortings were compared, discrepancies were studied further, and then either resolved or cases involved were taken out of the process categories.

4. Finally, descriptive statements of the categories were prepared and category frequencies were tabulated.

Analyses of the Case Studies

R

Process Identification. A drop out process was identified and described for 75 of the 80 case studies. At least one kind of predisposing factor was found in each of the 75 case studies, and in many cases more than one was identified. The four most common predisposing factors were: lack of acceptance, reported by 34 subjects (43 per cent); feelings that school was very difficult, reported by 33 subjects (41 per cent); feelings that school was of little value, reported by 27 subjects (34 per cent); and family discord, reported by 22 subjects (28 per cent).

Precipitating factors were identified in 73 of the 80 case studies. The three most frequently reported precipitating factors were: argument with school personnel, reported by 27 subjects (34 per cent); failure or seriously behind in school work, reported by 20 subjects (25 per cent); and marriage and/or pregnancy, reported by 19 subjects (24 per cent).

When frequency relationships between predisposing factors and precipitating factors were tabulated it was found that in general "Argument with School Personnel" was the precipitating factor most likely to accompany each of the predisposing factors.

Regarding the amount of time elapsing between the first consideration of dropping out and the actual drop out, 39 subjects (49 per cent) reported that they had not considered dropping out prior to the withdrawal. Forty-one subjects (51 per cent) reported that they considered dropping out for a month or longer prior to the withdrawal.

R

A variety of circumstances were reported by the 80 drop-outs as having potential for holding them in school. The most frequent, reported by 18 subjects (23 per cent) was being able to follow a vocational or some other special curriculum. Twelve subjects (15 per cent) indicated that nothing would have kept them in school, and 18 subjects (23 per cent) were unable to provide an answer.

All but eight subjects (10 per cent) discussed their decision to drop out of school with at least one of three kinds of associates (i. e., friends, family, school personnel). Fifty-three subjects (66 per cent) discussed their decision with at least two kinds of associates. Sixty-two (77 per cent) of the subjects discussed their decision with family members, 49 (61 per cent) with friends, and 38 (47 per cent) with school personnel.

Approximately 15 per cent of each class of persons who served as discussants encouraged the decision to drop out of school. Family members were more apt to discourage the decision than either friends or school personnel. Approximately 18 per cent of both friends and family members neither discouraged or encouraged the decision, while only 5 per cent of the drop-outs received noncommittal reactions from school personnel.

A descriptive statement of the drop out process was developed for each of the 75 cases.

Process Types. Six process types were identified in terms of separate predominant predisposing factors. The names assigned to these were: 1) School Too Difficult, 2) Lack of Acceptance, 3) Disruptive Home Situation, 4) Financial Need, 5) School Program Inadequate, and 6) "Engagement" and/or Marriage.

R

1. School Too Difficult. The predominant factor common to the cases in this process type as each subject's feeling that school work had been too difficult. Each felt that the academic standards in their high school had been somewhat above their achievement ability.
2. Lack of Acceptance. The predominant factor common to the cases in this process type was each subject's feeling a lack of acceptance by peers, or friends, or family, or a combination of these associates.
3. Disruptive Home Situation. The predominant factor common to the cases in this process type was a home situation perceived by the subject as psychologically upsetting. Divorced parents, illness in the family, and excessively domineering parents are examples of situations having the causal potential to produce a disruptive home situation.
4. Financial Need. The predominant factor common to the cases in this process type was a lack of adequate family and/or personal financial resources as perceived by each subject.
5. School Program Inadequate. The predominant factor common to the cases in this process type was each subject's feeling that for one reason or another the high school program was inadequate for meeting his needs.
6. "Engagement" and/or Marriage. The predominant factor common to the cases in this process type was a predisposition to withdrawing from school due to the subject's being either engaged or married. The term engagement is in quotation marks to indicate its rather general definition. That is, a subject stating, "We planned to be married," is defined as engagement, regardless of whether or not traditional public announcement procedures had been carried out.

Sixty-six of the 75 process cases were classified according to the six process types. The frequency distribution within each process type for the 80 case studies are reported in Table 59.

Nine case studies manifesting a process were not classified due to one or more of the following circumstances: lack of sufficient data, lack of a clearly predominant factor, and self-contradiction within a case study. The withdrawal in five cases was precipitated by one traumatic event, and the event in each of the cases seemed to be sole cause of the drop out. Processes were not identified in these five cases.

The process types are not clear cut, and are not intended to be extended to all high school drop-outs. Within the 66 cases classified according to the six process types there is a great deal of overlapping of predisposing factors.

Table 59
DISTRIBUTION OF 80 DROP-OUT CASE STUDIES ACCORDING TO SIX DROP-OUT PROCESS TYPES

Drop Out Process Types	Boys	Girls	Total
1. School Too Difficult	17	7	24
2. Lack of Acceptance	9	7	16
3. Disruptive Home Situation	3	6	9
4. Financial Need	2	1	3
5. School Program Inadequate	4	1	5
6. "Engagement" and/or Marriage	1	8	9
Process Identified, but Not Classifiable	6	3	9
No Process Identified	4	1	5

For instance, certain subjects in several categories reported that they felt school was difficult. The same is true regarding feelings of lack of acceptance. However, in the judgment of the writer, and in terms of the available case study information, the 66 cases classified according to the six process types each manifested one predisposing factor which was predominant in the drop out process.

Conclusions

The following conclusions seem warranted from the analyses of the data presented in this study.

1. A process of dropping out of high school can be identified for the majority of drop-outs by means of the case study method.
2. Drop-out process types in terms of predominant process factors as perceived by the drop-outs, can be identified by means of the case study method.
3. The drop-outs in this study were more apt than not to have a rather basic problem which effected their dropping out of school.
4. Most of the basic problems were of the type that could have been influenced positively by school personnel through direct treatment of the subject, manipulation of his school environment, cooperative efforts with non-school personnel and institutions, or some combination of these approaches.
5. The concept of individual differences applies to drop out processes. While various drop out processes exhibit similarities, the process by which each drop-out withdraws from school is unique.

SECTION VI

SUMMARY AND INTERPRETATIONS

The problem of drop-outs in secondary schools is extremely complex involving personal characteristics of students as well as characteristics of the school, the home and the community. A cluster of forces acts to influence an individual student to persist in, or to withdraw from, high school. For one student, lack of academic ability and failure may be the dominant forces which influence him to withdraw before graduation and for another, the desire and opportunity to get a job in order to keep up the payments on his car may be the influencing factors. PROBLEM

Because of limited resources, this study of the ~~drop-out~~ problem in Iowa high schools ~~has been~~ was restricted to certain factors related to characteristics of students, their homes and the school program. It does not include such important factors as the social and economic composition of the community. The researchers are convinced, however, from their visits to the communities in which the 73 schools in the study are located, that the nature of the community plays an important part in holding youth in high school.

The fact that differences in the drop-out rates between schools within a size group are greater than differences in the average drop-out rates for the four groups of schools studied, lends support to the foregoing observation. For example, two schools in Group I (10 to 99 students) lost no students during the three years studied and two other schools in this group lost slightly more than 26 per cent. Similarly one of the nine schools in Group IV (enrollment 500 and above) had a drop-out rate of only 16 per cent and two other schools in this group lost 33 and 36 per cent of their entering ninth grade students, respectively.

Personal characteristics of youth such as low intelligence, lack of scholastic success, low economic level of the father's occupation, low educational attainment of the parents and lack of participation in school activities were found to be positively correlated with withdrawal from high school. ~~It is the view of the authors that,~~ Since it is possible to identify probable drop-outs early in their secondary school years, a good guidance and counseling program and a curriculm which provides for differences in ability could do much to overcome the forces that are influencing youth to leave school before graduation.

The Holding Power of Iowa High Schools

The holding power for all of the 73 high schools in this study was 80.4 per cent and the drop-out rate was 19.6 per cent. When the sample employed was corrected to make it truly proportional for schools of all size in the state, the holding power was 84.2 per cent and the drop-out rate was 15.8 per cent. The latest United States Office of Education figures available (1950-51) show a holding power of 63.4 per cent for students entering the ninth grade for all public high schools in the nation and 75.4 per cent for Iowa schools. These figures, however, include transfer students and the current study does not. Even when transfer students are counted as drop-outs, it is apparent that Iowa's holding power is substantially higher than that for the nation as a whole. Nevertheless, the lesser drop-out figure of 15.8 per cent as found in this study represents a serious loss to the state. The fact that 17.6 per cent of the students in the sample who had an I.Q. of 120 or above dropped out of high school, makes this loss seem especially costly in human resources.

Although the small high schools in this study retained a higher average proportion of their entering ninth grade students than did the large high schools, these differences are more apparent than real because of the wide variations in drop-out rates among schools in the same size group. It is true that the nine schools enrolling 500 or more students lost an average of 24.88 per cent of their entering ninth grade students as compared to an average loss of only 13.48 per cent in the 32 high schools enrolling from 10 to 99 students. But two of the large schools lost only from 16 to 18 per cent and two of the small schools lost between 24 and 27 per cent. Actually the 17 schools in Group II (enrollments from 100 to 249) had the smallest average loss, 12.73 per cent.

As shown in Section I, however, the correlations between holding power and enrollment within size groups were small and none of them were statistically significant at the five per cent level of confidence. The results of the correlation analysis of holding power and school size are as follows:

Group I	+.14
Group II	-.38
Group III	-.04
Group IV	-.11

There is a general negative relationship and the large schools do have a somewhat poorer holding power, but the small correlation coefficients indicate large variations. It is probable, therefore, that size is not the instrumental factor.

One of the bright spots in the drop-out picture in Iowa schools in the small loss between the eighth and ninth grades. This is the point at which most Iowa youth have met the requirements of the State's compulsory attendance law, yet the drop-out rate for school districts of all sizes between the eighth and ninth grades is only 4.3 per cent. Differences among the four size groups of high schools in this respect are less than one per cent. Stated positively, 95.7 per cent of Iowa's eighth grade graduates enter high school.

Relationships Between Intelligence and Scholastic Factors and Persistence

Drop-outs as a group can be differentiated from persisters as a group on the bases of mean I. Q. scores, high school grade point average, elementary school scholastic record, and composite scores of the Iowa Tests of Educational Development. In all direct comparisons between drop-outs and persisters on the foregoing factors, a statistically significant difference was established at the one per cent level of confidence.

The average I. Q. for all drop -outs was 96.6 and for all persisters, 106.4. For male drop-outs, the average I. Q. was 93.8 and for male persisters it was 106.4. For female drop-outs, the average I. Q. was 99.4 and the average for female persisters was 106.4.

The mean high school grade point average for all drop-outs was 1.5 and for all persisters, 2.5. There was no significantly greater difference in grade point averages between male drop-outs (1.3) and male persisters (2.3) than between female drop-outs (1.8) and female persisters (2.7).

The average standard composite score on the Iowa Tests of Educational Development (ITED) for all drop-outs was 8.8 and 11.9 for all persisters. There was a significantly greater difference in ITED composite scores between male drop-outs (8.2) and male persisters (12.1) than between female drop-outs (9.4) and female persisters (11.7).

Significant variations in magnitude of differences in intelligence test scores, high school grade point averages, scores on the ITED, and elementary grades scholastic record between drop-outs and persisters were not found among the size groups of the schools studied. The size of the school cannot be said to be a differentiating factor when these criterion variables are determined.

Talented drop-outs as a group can be differentiated from talented persisters as a group on the basis of mean scores of high school grade point average, absenteeism, and participation in extra-curricular activities, but not in terms of the composite score on the ITED or occupational status of the father.

Males and females as groups exhibit significantly different mean scores on high school grade point average, intelligence and elementary record but not on composite scores of the ITED.

Students from various size high schools included in this investigation cannot be differentiated on the bases of mean intelligence test scores, high school grade point averages, elementary grade scholastic record, and composite scores of the ITED.

The differences between male drop-outs and male persisters is substantially greater than the differences between female drop-outs and female persisters in terms of intelligence test scores and scores on the ITED composite but not in terms of high school grade point averages. This is illustrated particularly well when male and female persisters are compared. In terms of ITED composite scores, male persisters score, in most categories, higher than do female persisters. In addition, male persisters are, on the average, equal in intelligence to female persisters. However, when male and female persisters are compared in terms of high school grade point averages, female persisters consistently are shown to receive higher school marks than are male persisters. For male and female drop-outs, the reverse situation occurs with respects to both intelligence and ITED composite scores with the female drop-outs scoring higher on the average, than the male drop-outs in every category. Female drop-outs also receive higher high school grade point averages than do male drop-outs.

Intellectual factors have been shown in this investigation to be significantly related to school persistence. Students of both sexes who drop out of school are, on the average, less intelligent as measured by intelligence tests, and have learned less in school as measured both by the ITED and by their high school grade point averages. There was considerable evidence indicating that these intellectual factors acted more forcefully on boys than on girls in terms of leading to withdrawal from the secondary school. That this factor of sex discrimination has been shown to operate in this investigation should surprise no one who is well acquainted with the previous research literature on this subject. Several other investigations conducted over the last 30 years have shown the same phenomenon to exist.

There is no evidence from this study indicating that students from small schools are, on the average, any less intelligent or, on the average, achieve less well than do students from large schools. Neither can the small school be accused of increasing holding power artificially by means of a more lenient marking system in the secondary school. To say that students from small schools achieve as well, on the average, as students from large schools on the ITED is not equivalent, however, to saying that small schools are meeting the needs of students as well as are large schools. We can only say that small schools, on the average, appear to be teaching the academic content and skills measured by the ITED as well as the large schools. This simply substantiates a statement which professional educators have been making for some time; namely, that the size of a school cannot, by itself, be taken as an indicator of the quality of instruction which students attending that school receive. There are very poor and very good small schools as well as very poor and very good large schools.

In view of the importance of intellectual factors as indicators of school persistence, it is disturbing to find that, among the 165 students in the overall sample with measured I. Q. 's of 120 or above,29, or 17.6 per cent, were drop-outs. Even more disturbing were the follow-up findings comparing these talented drop-outs with a matched sample of talented persisters who were of the same sex and came from the same school size group. Even with the small sample available in this study, it seems apparent that the talented persisters were being more productive both in an economic and an intellectual sense than were the drop-outs of equal intellectual capacity. Further study should be made regarding comparisons of talented drop-outs and talented persisters, both in terms of their eventual contributions to society and in terms of eventual personal satisfactions which they receive in later life.

Non-Scholastic Factors

The non-scholastic factors investigated were absenteeism, extra-curricular participation, residence with parents or persons other than parents, marital status of parents, occupational class of father, employment of mother outside the home, educational attainment of parents and overageness. A total of 768 drop-outs were compared with the same number of graduates or persisters randomly selected to determine if there were significant differences between the two groups of youth with respect to these non-scholastic characteristics.

The average rate of absenteeism for drop-outs was 8.5 per cent, or fifteen days out of a 180 day school year and the average rate for persisters was 3.1 per cent, or six days. Differences between boy and girl drop-outs and among school size groups were not significant. The results indicate that absenteeism is a significant factor in differentiating drop-outs from persisters.

When the number of different activity areas in which students participate in high school is taken as an index, there is a significant difference between drop-outs and persisters. The average number of different activities in which graduates participated was 2.46 and the average number for drop-outs was .89. The differences were greatest between persisters and those students who withdrew in the eleventh and twelfth grades. No important differences between drop-outs and persisters were found among the four size groups of schools, although all pupils in the small schools participated in more activities than did all pupils in the large schools.

Although the extent of participation in activities differentiates drop-outs from persisters, it has little value in identifying potential drop-outs because the number of activities available in the ninth and tenth grades when a large majority of drop-outs occur is small. This is not to say that it has no effect on holding power. The findings on extra-curricular participation do suggest that the school should make an effort to develop an activity program which is as comprehensive as possible, especially in the first two years, and to encourage all students to participate in it.

The results of the investigation of residence with parents or with other persons while students were in high school indicated that this factor is of little importance in differentiating drop-outs from persisters. Only five per cent of the drop-outs and two per cent of the persisters did not live with either of their parents while in school. These differences are statistically significant at the five per cent level of confidence, but the percentages are so small as to make this factor of little practical importance in identifying potential drop-outs.

Twenty-two per cent of the drop-outs and 11 per cent of the graduates came from broken homes. This difference is statistically significant at the five per cent level of confidence, but as in the case of residence, the percentages are too small to be of practical value in identifying potential drop-outs.

The proportion of parents of drop-outs failing to complete high school is much greater than that of parents of persisters. Neither parent of 67 per cent of the drop-outs had graduated from high school and the corresponding figure for persisters was 38 per cent. In 85 per cent of the drop-out cases at least one parent had not graduated from high school, but this was true for only 57 per cent of the persisters. These differences are statistically significant beyond the five per cent level. The educational level of parents, therefore, is of value to teachers and counselors in identifying potential drop-outs.

The occupational level of the father is a significant factor related to the persistence of a boy or girl in high school. When the occupations of drop-outs and a random sample of persisters were classified on a seven-point scale ranging from professional to unskilled labor, it was learned that the chances were nine to one that a child of an unskilled laborer would drop out as compared to the child of a professional man. Only five-tenths of one per cent of the drop-outs were from professional workers homes, while 23 per cent were from unskilled laborers homes. Iowa's high schools are not as selective as they once were with respect to economic status, but they still are selective. The occupation of the father is a useful factor in predicting persistence in school.

On the other hand, the results of the investigation of the number of mothers employed outside the home revealed little difference between drop-outs and persisters in this respect.

The average age of all of the ninth grade drop-outs in this study was 16 years and 4 months whereas the normal age for students completing the ninth grade is 15 years and 6 months. The drop-outs as a group were overage for their grade at the time of withdrawal, 66 per cent of the students withdrawing in the ninth grade were overage and 34 per cent of those withdrawing in the twelfth grade were overage. Students who are retarded a year or more when they enter the ninth grade are likely prospects for withdrawal before graduation.

A large majority of boys (69 per cent) who drop out of high school do so in the ninth or tenth grades, while more girls (60 per cent) drop out in the tenth and eleventh grades than at the other grade levels. Sixty-four per cent of all drop-outs occur in grades nine and ten and only 36 per cent occur in grades eleven and twelve.

The results of a multiple correlation analysis show that the factors which best differentiated boy drop-outs from boy persisters were: intelligence quotient, composite ITED scores, high school grade point average, number of extra-curricular activity areas participated in and educational attainment of parents. The correlation coefficient between the scores on these factors and withdrawal was .625. The factors which best differentiated girl drop-outs from girl persisters were: high school grade point average, per cent of time absent and number of extra-curricular activities participated in. The correlation coefficient between these scores and withdrawal was .653. Although these relationships are based on data for all four years of high school, it is probable that the factors identified as having discriminating power in combination would also hold for the ninth grade. Information based on student's elementary experience, especially a combination of intelligence test scores, standardized achievement test scores, grade point averages, and per cent of absenteeism probably would be most useful in identifying potential drop-outs when they enter the ninth grade.

Relationships Between School Factors and Holding Power

The relationships between the program of studies, the guidance program, the extra-curricular activity program, teacher morale, pupil morale, the physical plant and the holding power of schools in each of the size groups were studied. The size groups were studied independently, since the study was concerned with the effect of these factors in schools with high holding power and low holding power rates rather than with the effect of size. The top one-third and the low one-third of schools in each size group on an ascending scale of holding power were compared to determine if there were significant differences between these groups of schools with respect to the aspects of the school program studied.

In Group I schools there were no significant differences between schools with high holding power and low holding power with respect to the several aspects of the school program. The average rating of the top one-third of the schools on all factors was actually slightly lower than the average rating for the low one-third of the schools. There were small differences in favor of the schools with high holding power on the extra-curricular rating and on student morale. The zero-order coefficients of correlation between total holding power and each of the factors were positive only for extra-curricular activities (.17), guidance (.04), and student morale (.09).

In Group II the total rating was in favor of schools with high holding power as were the ratings on guidance, extra-curricular activities, teacher morale and student morale. As in the case of Group I schools, however, none of these differences was significant at the five per cent level of confidence. The correlations for total rating (.49), extra-curricular (.58) and teacher morale (.47) and holding power were positive and significant at the five per cent level of confidence.

The picture for Group III schools is much the same as for Group II. There were slight differences in favor of the high one-third on total rating, program of studies, extra-curricular, teacher morale, student morale and physical plant. None of these differences, however, were statistically significant. Positive but small correlations were secured between holding power and total rating (.11), extra-curricular (.31), and physical plant (.45), but these correlations are not significant at the five per cent level.

The total rating and the ratings on program of studies, extra-curricular, teacher morale and physical plant were in favor of the high one-third of schools in holding power in Group IV, but the differences in comparison to the bottom one-third of schools were small and not significant. One of the correlations, between holding power and extra-curricular activities, was positive and significant (.62). Other positive correlations were total rating (.20), program of studies (.51), teacher morale (.28), and physical plant (.46).

The factors studied in this part of the study are not cause and effect relationships, but simple relationships. The programs among the small schools in Group I, were so similar that no important differences would be expected between schools with high holding power and low holding power. The curricular offerings varied very little in these small schools and the guidance program was unorganized and did not employ essential techniques such as testing and sound counseling.

The fact that the total ratings of the school program in the three larger groups of schools was in favor of schools with higher holding power suggusts that experimentation to improve the program of a school might result in increasing its holding power. This possibility is further suggested in the findings on scholastic success and scholastic aptitude. Students with below average intelligence and low grade point averages withdraw from school in much greater proportion than do students of high intelligence and good scholastic success. Very few schools in this study, however, were making any provisions for individual differences other than elective courses and these were very limited in the small schools.

The fact that differences in this section of the study were generally not found to be significant, may be the result of the unrefined techniques available for rating various aspects of the educational program. Most of these ratings were subjective judgments on rating scales. It is possible that, if larger evaluation committees and more comprehensive rating scales could have been financed, more positive relationships might have been revealed.

The Process of Dropping Out of School

A study consisting essentially of a collection of case studies very seldom results in a set of evidence permitting board generalization. This study is no exception. On the other hand, such a study may very well provide the reader with added perspective regarding the broad nature and implications of the problem which is lost when one possesses only masses of statistical data. It is in this area of providing perspective that this study has its greatest contributions to make.

This study established clearly the theory that dropping out of the secondary school was, for almost every subject included, a true process and not a simple event. It was a process which began at some point in time considerably earlier than the day on which the student actually withdrew from school. As a process, dropping out of school was seen as involving the interaction of predisposing, precipitating, and counteracting forces in the student's environment with similar forces existing within the general personality makeup of the student.

Six process types were identified in terms of major predisposing factors associated with dropping out of school. These were: (1) School too Difficult, (2) Lack of Acceptance, (3) Disruptive Home Situation, (4) Financial Need, (5) School Program Inadequate, and (6) "Engagement" and/or Marriage. In all but 14 cases, one of these factors was seen as operating as a major predisposing force. For at least five out of six major predisposing forces, the secondary school is in a position to take some constructive action.

In almost every case some precipitating factor was associated with dropping out of school. Many of these had to do with incidents taking place in school. If, as other parts of this total investigation have shown, potential drop-outs can be identified rather early in their school career, perhaps conscious attempts could be made on the part of school personnel to avoid contributing to a student's withdrawal from school.

In only a minority of cases did students report having talked with any school personnel prior to withdrawing from the secondary school. Certainly, this is a condition which need not exist. If measuring instruments are inadequate in a given school for identifying a potential drop-out, there still remains the possibility of talking with each student concerning the desirability of completing his secondary school education.